MAY 17 1944

PAPER TRADE JOURNAL

MAY 11, 1944

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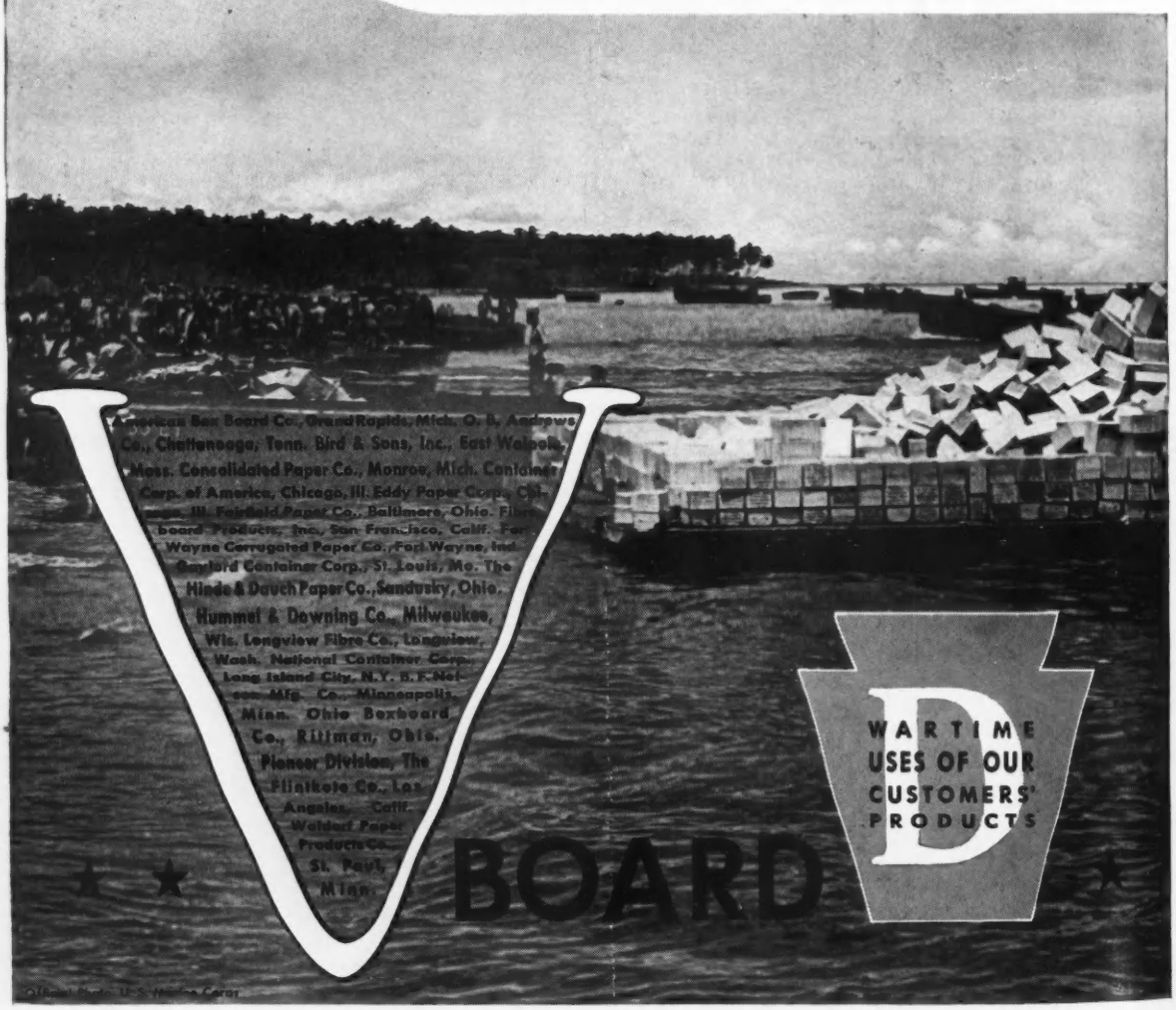
American Box Board Co., Grand Rapids, Mich. O. B. Andrews Co., Chattanooga, Tenn. Bird & Sons, Inc., East Walpole, Mass. Consolidated Paper Co., Monroe, Mich. Container Corp. of America, Chicago, Ill. Eddy Paper Corp., Chicago, Ill. Fairfield Paper Co., Baltimore, Ohio. Fibreboard Products, Inc., San Francisco, Calif. Fort Wayne Corrugated Paper Co., Fort Wayne, Ind. Gaylord Container Corp., St. Louis, Mo. The Hinde & Dauch Paper Co., Sandusky, Ohio. Hummel & Downing Co., Milwaukee, Wis. Longview Fibre Co., Longview, Wash. National Container Corp., Long Island City, N.Y. B. F. Nelson Mfg. Co., Minneapolis, Minn. Ohio Boxboard Co., Rittman, Ohio. Pioneer Division, The Flintkote Co., Los Angeles, Calif. Waldorf Paper Products Co., St. Paul, Minn.
V
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Employment and Payrolls Lower in Midwest

Department of Labor Reports Fewer Workers and Smaller Payrolls In February—Little Change In Paper Market—Salesmen Feature Movies — Dr. Otto Kress Addresses Paper Group — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 8, 1944—The paper goods and allied groups reporting to the Illinois Department of Labor showed a decline of 1.7% in employment for February as compared to January and 3.6% reduction in payrolls. The paper box, bag and tube industry showed a 1% decrease in employment and 1.6% reduction in payrolls while the classifiication of "other paper goods" revealed a reduction of 1.6% in employment and an identical decline in payrolls for the comparative period.

The same analyzation from the State Department of Labor showed eighty-eight industrial injuries during February for the paper and allied products grouping, the preponderance of injuries coming from "working machines" with a likewise larger proportion resulting from the handling of objects. None of the injuries became fatalities. Also included in the various tabulations was one showing a total of 723 compensable injuries for 1943 for the paper group, 2.4% of the total with 0.3% fatal to the total of fatal injuries.

Little Change in Paper Supply Situation

No change was indicated in the local paper market this week with the exception that the pulp situation had grown more intensely aggravating. Chicago paper trade executives were impressed with the statement made here by Dr. Otto Kress of the Institute of Paper Chemistry that if the industry had 18,000 added workers in cutting and in fabricating it would be "out of the woods" as far as the shortage of pulp is concerned. News that the German War prisoners were coming into the cutting areas in a greater quantity was accepted with some reservations in many quarters. Kraft papers were possibly in the most severely critical situation in this area though all grades of sulphites were piling up backlogs of orders extending into the fall months and beyond according to reports. Set-up and folding box manufacturers and jobbers were facing their most critical season with the retail outlets here daily expected to receive a "Declaration of Policy" from the War Production Board covering a more specific and resultful conservation and salvage of waste paper and used containers and boxes. Waste paper collections in this region continued to be "phenomenal" in comparison to other sections of the country with the school children of the area making a contribution that is keeping the nearby mills at least in a fairly busy operating capacity. Suburban areas around Chicago are expected to begin anew on salvage drives this week end.

Salesmen View Feature Movies

Though forced to postpone the scheduled appearance of Douglas C. McMurtrie until May 8, the western division of the Salesmens Association of the Paper Industry had the privilege of viewing a double feature moving picture production at its Monday, May 1, luncheon meeting at the Hotel Sherman. The first of these was the regularly scheduled showing of the Cherry River Paper Company operations, the film titled "Paper-Guardian of Health." Cherry River is a big producer of food processing and handling papers as well as of the paper cartons used extensively by milk companies. The film outlined the usefulness of paper in promoting every sanitation in the home.

The second film provided additional entertainment in the showing of the Shell Oil Company's moving picture "Flight Log." Coming on the eve of the tenth anniversary of the first 100 Octane gas supplied to the United States, the film portrayed in interesting fashion the development of gasoline and of aviation from 1903 up until the present date. Most interesting to the salesmen and their guests was the pictorial demonstration of the flight power of Uncle Sam's air fighting and transporting machines as motivated by the newest 100 Octane gas from the Shell refineries.

Mr. McMurtrie, typography expert of the Ludlow Typography Corporation, could not fill the May 1 date because of a previous speaking commitment in Minneapolis. His appearance at the May 8 meeting is expected to bring a large audience of sales executives and their guests.

Professional Group Hears Dr. Kress.

One hundred and twenty-five technical paper executives and their guests attended the May 1 meeting of the Professional Paper Group held at the Hamilton Hotel. Harold Alley, Tested Papers, Inc., presided at the meeting and introduced A. E. Montgomery of J. O. Ross Engineering Corporation who, in turn presented the speaker of the evening, Dr. Otto Kress, technical research director of the Institute of Paper Chemistry. Dr. Kress made a forceful presentation of the pulp situation at the present time and indicated that if the industry "was given 18,000 men there would be no pulp shortage." He stressed the fact that manpower was the bottleneck and urged a far greater attention on this specific problem, maintaining that the raw materials were available but the industry had suffered through a too belated consideration of its manpower problem. Dr. Kress also indicated his belief that the pulp of the future would be of kraft base and recounted work being done on the bleaching of kraft at the present time. His talk also recorded interesting observations on general trends in pulp production and development between 1918 and 1940 and included comments on production of pulp from cornstalks.

Attend Safety Conference

The paper industry contributed generously in the holding of the 22nd annual Midwest Safety Conference and Exposition which was held in Chicago this week. An unusually large attendance gathered at the Hotel Sherman sessions on May 2, 3 and 4 with at least one representative of the paper industry. E. A. Page of the Industrial Relations Department of the Kimberly-Clark Corporation of Neenah, Wisconsin, participating in the regular program. Mr. Page appeared as the speaker on "The Supervisors' Part in Accident Prevention" at an industrial safety session on Tuesday, May 2.

New Machine Will Aid Forest Planting

Mill Representatives and Forestry Experts Present At Demonstration of Tree Planting Machine — Safety Conference To Be Held May 25 — Workers Vote For Independent Union — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 8, 1944—Several hundred persons saw a demonstration of new tree-planting machines on Wednesday, May 3, at the village of Biron, Wood County. Among the interested spectators were representatives of several paper mills, state forestry experts and many farmers.

Aldo Leopold, member of the Wisconsin Conservation Commission, predicted that the machine would be a great boon to forest planting. It was developed during the last year by H. J. Bruhn, of the Wisconsin College of Agriculture, as designer, and Fred B. Trenk, agriculture extension forester of the same institution, Madison, Wis.

Mr. Trenk, who has spent considerable time in perfecting the design and in using the machine in many experiments during the last year, was in general charge of the demonstration. He stopped the operations at various periods in order to explain in detail the mechanical features. He pointed out that it could be used in part as a tractor plow for ordinary farm operations, in less than half an hour, by separation of the rear carriage and by removing certain parts. He said that the machine when put into mass production would be available at considerably less money than the cost of the present custom built machine, which cost less than $150.

Despite many interruptions caused by intermittent rainfall and time out for inspection by visitors, the two machines, both drawn by farm tractors, planted more than 15,000 trees in the forest plot. Each machine averaged between 1,800 and 2,000 trees per hour. White spruce, two-year-old transplants, were used entirely for the demonstration, the trees being planted at an average of 4 to 5 feet apart in rows slightly more than 6 feet apart. The machine is adjustable for larger transplants.

The planter is seated behind a plow on the rear carriage of the machine, and the trees are fed into the furrow. Dished disc wheels at the rear pack the soil around the trees, firmly imbedding each seedling.

F. G. Kilp, chief forester of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., and chairman of the Wood County Board of Supervisors, headed a large delegation of the board to witness the demonstration. Representing the Mosinee Paper Company, Mosinee, Wis., were Carl Kronenwetter, E. E. Emerson, S. R. McSwain and Philip Kronenwetter. The federal forest service was represented by H. E. Ochsner, Milwaukee, Wis. Foresters, landowners and conservationists were present from virtually all sections of the state.

Safety Conference Opens May 25

The annual Fox River Valley and Lake Shore Safety Conference will be held Thursday, May 25, at Green Bay, Wis., and the Wisconsin River Valley Safety Conference will be held at the Willard D. Purdy school auditorium at Marshfield, Wis., on June 8.

Programs for the Wisconsin Valley sessions submitted by the panel chairmen have been approved by the general arrangements committee. Between 350 and 500 safety committeemen, foremen and executives are expected to attend the all-day session, which will start at 10 o'clock in the morning. The afternoon will be devoted to panel discussions for specific industries and the meeting will close with a banquet at the armory and community building that evening.

At the Green Bay conference, Charles Abel, Badger-Globe mills of Kimberly-Clark Corporation, Neenah, Wis., will be chairman of the paper products and finishing sectional meeting. H. H. Aderhold, safety director of the Menasha Products division of the Marathon Paper Mills, Menasha, Wis., is co-chairman of the paper and pulp sectional meeting. E. A. Page of the Kimberly-Clark Corporation will be in charge of a motion picture film provided by the National Safety Council in collaboration with the United States Department of Labor.

Registration will start at 8:30 in the morning, and the morning session will be held in the Bay theatre. The luncheon meeting for executives and personnel men will be at Hotel Northland, and for industrial and public health nurses at the Beaumont hotel. Sectional meetings will be from 2 o'clock to 4:30.

Bruce Thomas, war correspondent, will speak at the evening program, to be held at Washington Junior High School.

Truck Drivers Get Safety Awards

Eight drivers were honored recently for their safety records when truck drivers of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., held a meeting at the Elks Club in that city. They operate company trucks throughout the state and their safety records are rewarded at the annual meetings. Fred Giese, George Lundquist, John Henke, Walter Panzer, Ed Saeger and Albert Hermes were awarded pins and certificates signifying an eight-year period of company truck driving without an accident. Geral Kaudy received a pin for six years, and Verne Hansen for three years.

Worker Vote for Independent Union

Employes of the Neenah Paper Company, Neenah, Wis., on May 3 selected the Neenah Paper Company Independent Union as their sole bargaining agent, in an election held under the direction of the National Labor Relations Board. Of the 318 employes voting, 175 expressed a preference for the independent union, 130 favored the International Brotherhood of Paper Makers (AFL), and 13 indicated they wanted neither of these organizations to represent them.

Engineers and Foremen To Hold Meetings

The Kimberly-Clark Engineers Club, Neenah, Wis., will elect officers at its final meeting of the season on May 17.

R. K. Neller spoke on the cost system at a meeting of the Kimberly-Clark Society of Chemical Engineers at a dinner meeting May 2 at the Copper Kettle, Appleton, Wis.

Forty foremen of the Badger-Globe mill of Kimberly-Clark Corporation, Neenah, held a dinner meet-

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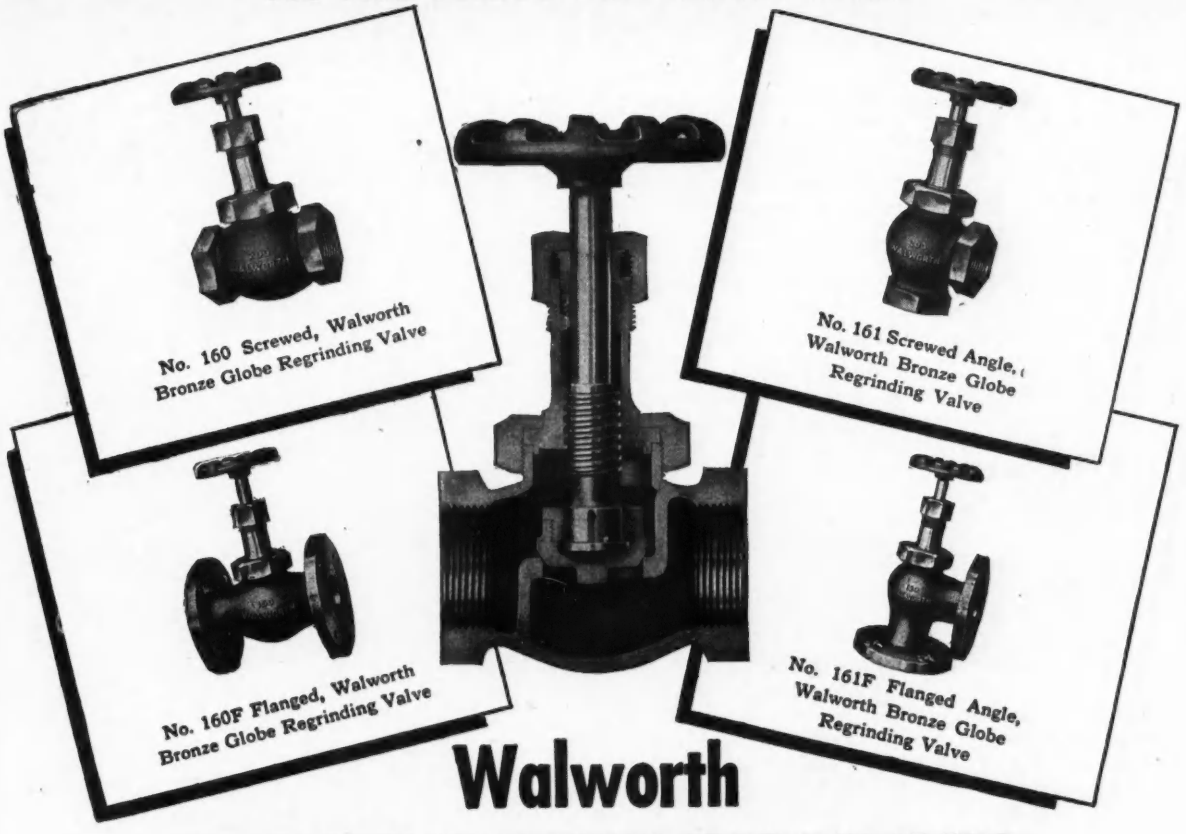
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ing and discussion May 1 at the Valley Inn, Neenah. William Kellett, assistant general superintendent of Kimberly-Clark mills, discussed future developments in the paper industry.

To Give Workers More Life Insurance

Kimberly-Clark Corporation will give Kimberly, Wis., mill employees an additional $1,000 life insurance, it was announced recently. Most employes have carried $2,000 group life insurance at a small cost. Two-thirds of the employes' Blue Cross Hospital insurance for the entire family will be paid by the corporation. Employes will pay only 50 cents a month.

Safety Committees Named By Women

Safety and absentee control committees have been named by the Kimberly-Clark Corporation's Lakeview mill at Neenah, Wis.

Mrs. Lucille Nourse, Mrs. Tena Resch and Mrs. Hyacinth Jorgensen are members of the safety committee, which will meet with safety directors of the corporation to discuss what types of accidents are most prevalent at the mill and secure suggestions for improving safety conditions. Representatives of all departments will receive these suggestions, and a program will be drafted.

Rex Uni-Flo Conveyor

Chain Belt Company of Milwaukee, Wis., announces the manufacture of a new conveyor—elevator system to be known as the Rex Uni-Flo. This type of conveyor is a new and unique method for the mass handling of free-flowing bulk materials.

The new Rex Uni-Flo is a conveying unit of the continuous-stream type. It is composed of a chain belt equipped with a closely-spaced scraper-carried flight, which operates in an enclosed casing, with the entire cross section of the casing and all the space between the flights solidly filled with the material being handled, a continuous flow of material results.

Rex Uni-Flo has many distinguishing features. It has a positive and unique discharge mechanism that definitely removes all materials in the conveyor system at the point of discharge. It is completely self-feeding and no auxiliary feeding devices are required. Rex Uni-Flo is self-cleaning and has a minimum of churning and degradation of materials either while in operation or after the feeding has stopped. It operates at relatively slow speeds which means longer life and freedom from maintenance worries.

Rex Uni-Flo is flexible in application with a wide choice of basic units and few limitations as to layout. It can convey material horizontally, vertically, or at any angle. It offers a direct line of transportation by the shortest possible route to conserve valuable productive space. Because it is essentially a closed-circuit method of handling, it is clean and dust-free.

Although Rex Uni-Flo is a recent development, there is more than half a century of "know-how" in the conveyor field behind it. The Chain Belt Company has been engineering and manufacturing conveyors for over 50 years. For more information on Rex Uni-Flo, Bulletin No. 442 giving capacity tables, horsepower formulas, general arrangements and dimensions is available upon request.

Chain Belt Company also manufactures many other types of bulk material conveyors including belt conveyors, apron feeders, bucket elevators, scraper conveyors, and a complete line of power transmission chain belts and machinery.

Paper Production for March

The following data cover all known mills and represent a continuation of the monthly statistics initiated in "Facts for Industry," series 24-2-1. For annual data and a description of the statistics, "Facts for Industry," series 24-1-2 should be consulted. All inquiries concerning these data should be addressed to the Bureau of Census, Washington 25, D. C.

Type of paper	1944 March[1]	1944 February[2]	March 1943
All types	1,480,701	1,379,311	1,494,857[3]
Newsprint	60,552	54,118	72,016
Groundwood papers	49,606	47,915	49,993
Printing	18,871	17,413	14,428[4]
Specialties	30,735	30,502	35,565[4]
Book papers	125,305	121,938	145,634
General printing	90,237	84,384	103,039[4]
Converting papers	34,911	37,233	41,749
Other book papers	157	321	846
Fine papers	87,716	77,291	92,624
Writing papers	64,640	57,153	70,564[4]
Cover and text	4,663	4,194	3,572
Reproduction	4,562	4,186	4,013[4]
Bristols[5]	8,121	6,626	8,855[4]
Thin papers	5,116	4,753	5,091
Other fine papers	614	379	529
Wrapping papers	176,400	163,517	170,705
Bag papers	32,163	34,881	44,280
Glassing	7,406	7,051	7,250
Greaseprooof	2,288	1,894	2,588
Vegetable parchment	3,059	2,638	3,121
Converting papers	72,892	66,243	50,486[4,6]
Wrapping papers	58,592	50,810	62,980[4,6]
Multi-wall sack papers	30,499	29,558	26,447
Special industrial papers	20,056[6]	18,973[6]	17,634
Sanitary papers	70,349	64,902	69,385
Tissue papers	14,487	12,908	13,743
Absorbent papers	8,853	7,231	6,993
Building papers	79,086	74,416	74,767
Paperboard	757,792	706,544	754,899
Container board	351,943	333,872	358,679
Folding boxboard	178,002	160,575	178,399
Set-up boxboard	64,679	56,734	74,834
Cardboard	5,889	5,579	4,919
Building board	94,483	88,397	96,193
Miscellaneous other board	62,796	61,387	41,875
Tube stock	42,962	43,048	24,662

[1] Preliminary.
[2] Revised.
[3] Includes a small quantity of paper not classified by type.
[4] Data revised to conform with certain changes in paper and paperboard classifications, which became effective beginning January, 1944. For figures covering other months of 1943, see "Facts for Industry," Series 24-2-5.
[5] Includes Government Postal Card stock.
[6] Includes a small quantity of Special Industrial Papers having a basis weight of less than 100 pounds. Such paper was classified as Wrapping Paper prior to January, 1944.

Leon Bischoff Visits South America

The Green-Kriegsman Paper Company, Inc., announces the departure of its export manager, Leon Bischoff, for a trip to several of the South American markets in order to confer with a number of the company's representatives and customers.

This is the second trip made this year and is viewed by the company as most important in the light of its post-war plans.

In addition, Mr. Bischoff, who is a member of the executive board of the Boy Scouts in New York and representative of the National Council, will have and opportunity to serving scouting while in Latin America through an attempt to interest scout members in South America in active participation of the new program set up by the Coordinator of Inter-American Affairs, Mr. Nelson D. Rockefeller.

War Prisoners To Cut Pulpwood

FORT DEVENS, Mass., May 8, 1944—The establishment of a branch prisoner of war camp at Princeton, Me., was announced May 5 by Col. Harold G. Storke of Hull, commander of the base prisoner of war camp here. Several hundred German prisoners of war will be employed there cutting pulpwood for a number of Maine companies.

Pleasant dreams...

Maybe the laundries won't like it—but paper sheets and blankets should find a ready post-war market. Think of these clean, economical, *disposable* articles for Hospitals, Tourists Camps, Summer Cottages, Hotels, YMCA's and other organizations faced with a bedding problem. Then think of your equipment needs for meeting the increased demands for paper of all kinds. Langston Slitters and Roll Winders, for instance. We're ready when you are!

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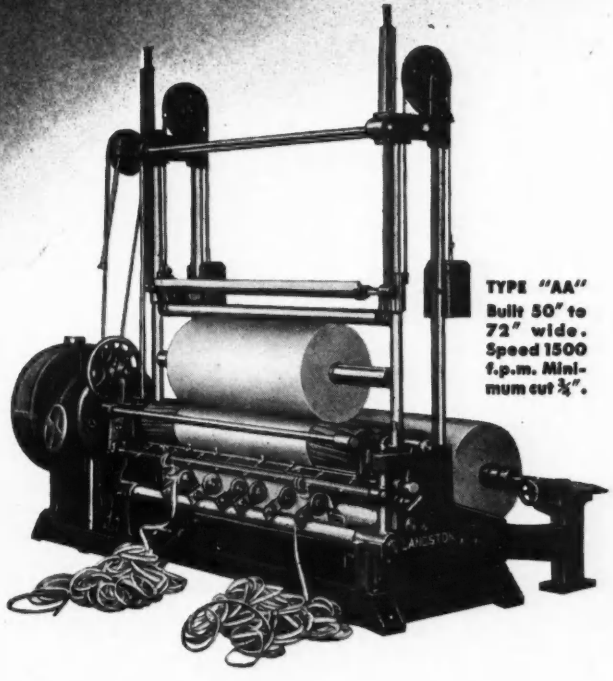

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To Build Paperboard Mill in Puerto Rico

A contract has been awarded to construct a paperboard mill for the Puerto Rico Development Company of San Juan, Puerto Rico which is the culmination of a year's work in studying the proposed project and negotiating contracts for the major items of equipment.

The mill is one of a number of projects being developed by the company to help raise the standards of living in this island possession of the United States, and at the same time, manufacture locally, certain products for which there is a good demand.

Mill Capacity

The mill is being built to meet the present requirements for about 40 tons per day of paperboard for the manufacture of containers and boxes, but the productive capacity can be doubled with very few changes when the demand warrants.

The chief raw material will be waste paper collected in Puerto Rico, supplemented by pulp made from bagasse obtained from nearby sugar cane "Centrals."

The mill is to be built in the suburbs of San Juan, which is the chief port and largest city of Puerto Rico. It is to be of modern design as can be judged from the accompanying perspective view.

The buildings are of reinforced concrete construction throughout and designed to withstand the hurricanes which occur periodically.

Mill Equipment

The main equipment being installed consists of the following:

A 6-cylinder paperboard machine having about 90 inch trim and equipped to make either rolls or sheets.

The machine room has a modern vapor exhaust system and traveling cranes.

A waste paper warehouse will provide facilities to store, sort and bale waste papers according to grades. From here it will go to the usual stock preparation system consisting of beaters, jordans, rifflers, screens and deckers.

Bagasse, in bales, is to be stored in large outdoor piles holding nine month's supply. Such large storage is necessary because sugar cane, from which bagasse is derived, is harvested but once a year.

From the storage piles, the bagasse will be conveyed to the pulp mill where it will be cooked in large rotary digesters. It will then be washed and refined before mixing with the other raw materials used in making board.

It is planned to install boilers of sufficiently high pressure so that the steam required for process is adequate to make enough power so that the mill will be self-contained. However, the mill is to be tied in to the local power company's transmission line. The water will be supplied from wells, while the mill effluent will be carried out into the harbor.

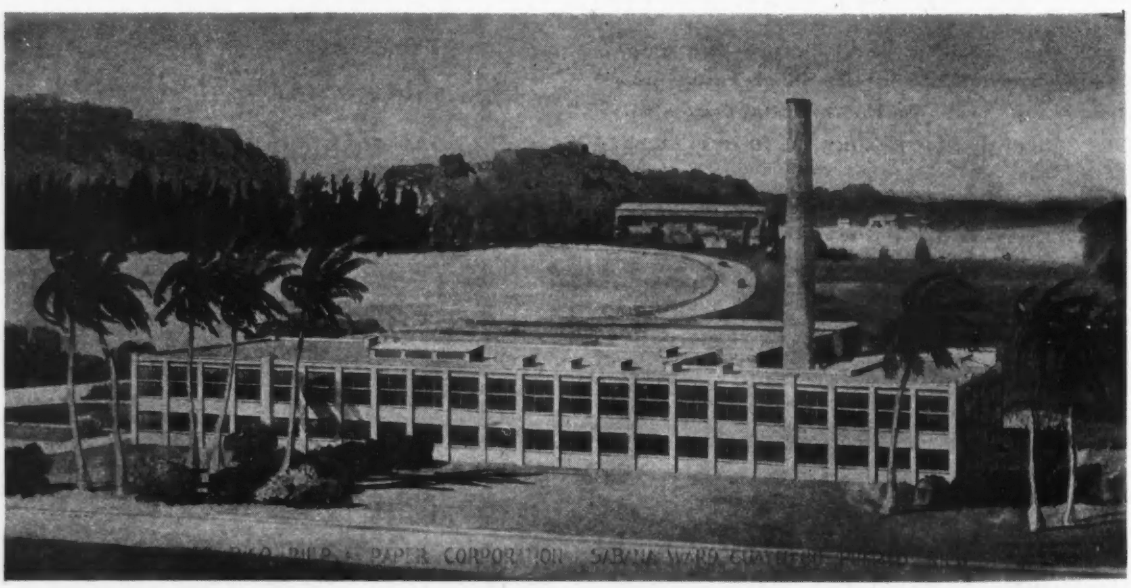
Particular attention has been paid to make working conditions pleasant by the installation of modern locker rooms, good ventilation and lighting, and substantial construction.

Experimental Work

Before process details were worked out, a good deal of preliminary research work had to be done. Experimental work was carried out to determine the procedure to follow in cooking and preparing bagasse pulp. This was then followed by cooking pulp in a commercial installation and then introducing it in certain percentages in the manufacture of jute container board. Arno Nickerson of New York City is being consulted on paperboard process problems and K. O. Guthrie of Pleasantville, N. Y. is now in Puerto Rico as field engineer on this project.

Waste Paper Collections

Puerto Rico has a population of two million, and a survey of the Island was made to determine the

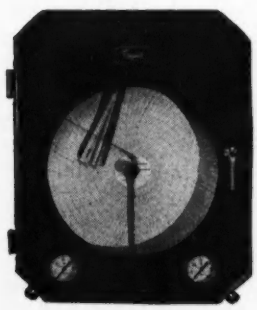


PROPOSED PAPERBOARD MILL OF PUERTO RICO DEVELOPMENT CO.

FAMOUS DATES IN PAPER MAKING HISTORY

1690... The French and Indians were still on the warpath when the first paper was made on the North American continent. In those days (161 years before a couple of fellows named Taylor started making thermometers) paper was made of everything from corn husks to leather shavings, —almost everything, in fact, except wood pulp.

☆ ☆ ☆



1929 was a bad year for a lot of people. But it was a happy day for the paper industry because it was then that Taylor perfected the first practical and successful application of Automatic Grinder Temperature Control. For the first time you had an instrument that told you *precisely* what effect varying temperatures had on production, quality of pulp, freeness, color and stone costs, and this instrument assured automatic maintenance of the desired temperature. Today, Taylor offers you a control system that will improve the efficiency of any type of grinder—continuous caterpillar, semi-magazine, hydraulic magazine, or rotary. If you need instruments for this or any other purpose, ask your Taylor Field Engineer! Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording, and controlling temperature, pressure, humidity, flow, and liquid level.*

BACK THE ATTACK!
BUY EXTRA WAR BONDS
THIS MONTH

Taylor Instruments MEAN **ACCURACY FIRST**

ARMY E NAVY

IN HOME AND INDUSTRY

☆ ☆ ☆

amount of waste paper which may be collected economically. This survey indicates that sufficient is available to meet the anticipated demand. A widespread collection system is now being set up on the basis of what is considered good practice, and it is planned to get the system into smooth operation by the time mill construction is completed.

Production of paperboard is scheduled for early in 1945.

Design of Mill

The mill is designed by Roderick O'Donoghue, consulting engineer, 420 Lexington Avenue, New York City and construction is being carried out under his supervision. He will purchase all equipment and will hire the key personnel consisting of general superintendent, tour bosses, beater men, machine tenders, digester cook, power plant engineer, and master mechanic. Inasmuch as there is no paper mill in Puerto Rico at this time, these men will be hired in the Continental United States.

The W. J. Green Company, Inc., 175 Fifth avenue, New York 10, New York, dealer in paper mill supplies and textile mill wastes, announces the addition of George Burns to its staff.

Mr. Burns for the past two years has been connected with the Winmar Fibre Company of Winona and Willmar, Minn., and for approximately twenty-five years prior thereto with Daniel M. Hicks, Inc.

Mr. Burns will assist W. J. Green in the purchasing, selling and general management of the company. Because of the many years he has been connected with the industry he is well and widely known throughout the domestic and foreign trade circles.

Indianapolis Paper Demand Heavy

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 8, 1944 — Demand for paper products and paper in this territory continued heavy last week and the backlog of orders continued to mount somewhat. However, there was some indication that with a little more production, it might be possible to even orders and deliveries somewhat more than has been the rule for the last two years. Production was reported slightly better.

All was not entirely rosy, however, for manufacturers and jobbers were faced with rising costs in spite of OPA, WLB and other Government agencies that are supposed to prevent such. It is believed that the rise in production last week is merely temporary, since there is nothing to indicate that the supply situation will be eased.

Box manufacturers report a continued steady business, considerably beyond their ability to handle. Some here believe there will be some improvement in the raw material market in another couple of months, but the backlog of orders continues to mount. The labor situation is becoming more acute in this area. The number of employees being taken for the armed services is increasing and their vacancies are hard to fill. Increasing taxes and other increased items of overhead are making the situation acute when it comes to the proper side of the ledger.

Tissues moved well last week with promise of more stocks soon. The demand for bags and wrapping paper continued to be heavy and another campaign is starting to urge buyers in stores to save wrapping and boxing wherever possible. The fine paper market showed no change with a heavy demand and prices strong.

Rex Vincent Moves to New York

Rex Vincent of the technical staff of the Bulkley, Dunton Pulp Company has moved from the company's Chicago office to New York, it was announced by Fred Enders, president.

For the past several years Mr. Vincent has been doing extensive research work in connection with pulp manufacturing, and the conversion of wood pulp, especially purified and dissolving pulps. His

REX VINCENT

work has taken him to practically all of the important pulp producing and consuming centers in the United States and Canada. He will continue his technical and research work in Bulkley, Dunton headquarters, 295 Madison avenue, New York. Mr. Vincent is a chemical engineer, graduated from the University of Cincinnati. He joined Bulkley, Dunton in 1937.

Cary Buys Paper Plant

The purchase of the Wardlow-Thomas Paper Company of Middletown, Ohio, was announced recently by The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio, and brings to nine the total number of plants now operated by Carey. Other manufacturing units are located in Hamilton and Middletown, Ohio; Perth Amboy, N. J.; Plymouth Meeting and Philadelphia, Pa.; and Lennoxville and East Broughton, Canada.

According to R. S. King, president of Carey, the acquisition of the Middletown property is another step in the general expansion program of the company both for wartime and postwar production.

The company has under consideration the manufacture of pulp and paper products for war use in this plant. Ultimately this unit will produce certain building materials made in other Carey plants.

The new property consists of six acres of ground with a number of substantial brick mill buildings housing two-cylinder paper machines, power plant and coating mill with accessory equipment. Wardlow-Thomas employees will continue under the management of H. L. Brooks, former vice president. Mark A. Thomas, former president and treasurer, will retire. The Wardlow-Thomas Paper Company is one of the oldest paper making industries in the Miami Valley.

OF EXCELLENCE
. . . in War Production

How a manufacturer of Fourdrinier Wires won the Army-Navy "E" by making parts for antiaircraft guns and other weapons may turn out to be one of the minor production epics of this war. At least, so the War Department seemed to think, as they presented the "E" to the men and women of Cheney Bigelow Wire Works in impressive ceremonies held at the plant on May 3, 1944

The job wasn't easy. Quite different, in fact, from many plants which just went on making their peacetime products in stepped-up volume. It called for the use of new machinery, the development of new processes, the training of new workers.

But the men and women of Cheney Bigelow were equal to the task. Sparing no effort of hand or brain, they attacked the problem. And, in a remarkably short time, parts for the M-45 antiaircraft gun were rolling from the production lines into the hands of the prime contractors.

☆ ☆ ☆

Only recently revealed, were the details of the M-45 gun, which played an important part in the battle of North Africa.

Mounted on a half-track or trailer it shepherds moving columns of troops, guards them against strafing enemy aircraft with a quadruple sting of 50-caliber machine guns. The gunner, operating the controls, can fire from any point of a complete circle, and in any direction from 10° below ground level to the zenith. The enemy knows and respects its power. Columns of men and materiel go through with minimum interference.

☆ ☆ ☆

Vital parts of the M-45 from gun sectors to control columns flow in a steady stream from the production lines of Cheney Bigelow today. Parts for Gyro compasses, gliders, forced draft systems for destroyers and carriers, Navy AA guns, 90 mm. AA guns and small caliber shell loading machines are but a few of the other war items that have been on our production schedule. We wanted our customer-friends to know about this. Possibly it will help them to understand, when their orders are not always filled with customary peacetime promptness.

CHENEY BIGELOW

Fourdrinier Wires · · Dandys · · Cylinders · · Wire Cloth

CHENEY BIGELOW WIRE WORKS · 417 LIBERTY STREET · SPRINGFIELD, MASS.

Awards For Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 10, 1944—The Mead Sales Company has been awarded the contract for furnishing the Government Printing Office with 59,250 pounds of white offset paper at 7.23 cents. Other paper awards for paper bought on the open market include the following:

Mead Sales Company will furnish 48,000 pounds of offset paper at 7.23 cents and the R. P. Andrews Paper Company will furnish 8,330 pounds of tag paper at 10 cents per pound. Bradner, Smith & Company will furnish 91,482 pounds of enamel book paper at 9.21 cents and 15,264 pounds of white index paper at 13.35 cents by Barton, Duer & Koch Paper Company.

Barton, Duer & Koch Paper Company will furnish 115,000 pounds of M.F. paper at 8.63 cents and Walker, Goulard & Plehn Company will furnish 47,100 pounds of white book paper at 7.15 cents. The same firm will also furnish 159,000 pounds of offset paper at 7.15 cents and the same firm will also furnish 124,500 pounds of offset paper at 7.15 cents.

Barton, Duer & Koch Paper Company will furnish 25,543 pounds of white index paper at 13.35 cents and Walker Goulard Plehn Company will furnish 70,650 pounds of white offset paper at 7.15 cents. McIntosh Paper Company will furnish 17,150 pounds of white book paper at 7.56 cents and Walker, Goulard & Plehn Company will furnish 73,656 pounds of white M.F. paper at 7.57 cents and the Castanea Paper Company will furnish 190,000 pounds of white book paper at 7.59 cents.

R. P. Andrews Paper Company will furnish 48,000 pounds of kraft wrapping paper at $2,352.00, and 80,000 pounds of light M.F. paper will be furnished by the Graham Paper Company at 8.67 cents.

Arkell Safety Bag Company will furnish 10,000 sheets of kraft paper at $35.65 per M sheets and the R. P. Andrews Paper Company will furnish 28,500 pounds of photo gelatine paper at $13.50 per cwt. and the Watervliet Paper Company will furnish 16,895 pounds of white offset paper at 9.55 cents and 30,000 pounds of white writing paper will be furnished at 6.4 cents by Whitailer Paper Company.

Frankling Research Company will furnish 97,000 pounds of white map paper at 18.85 cents and the same firm will also furnish 112,000 pounds of nautical chart paper at 18.85 cents and 33,000 pounds of map paper will be furnished by the Stanford Paper Company at 14.72 cents. Eastern Corporation will furnish 60,000 pounds of white duplicator paper at 8.35 cents and 120,000 pounds of ledger paper at 8.3 cents by the Stanford Paper Company.

The Stanford Paper Company will furnish 240,000 pounds of ledger paper at 8.35 cents and 8,300 pounds of white book paper will be furnished by the Northwest Paper Company at 7.57 cents. The Northwest Paper Company will also furnish 10,600 pounds of white book paper at 7.57 cents and the same firm will also furnish 8,300 pounds of white book paper at 7.95 cents and the same firm will also furnish 10,600 pounds of white book paper at 7.95 cents.

The Northwest Paper Company will furnish 44,800 pounds of white book paper at 7.57 cents and the Stanford Paper Company will furnish 21,075 pounds of white map paper at 15.5 cents. Stanford Paper Company will furnish 45,300 pounds of map paper at 15.5 cents and the Barton, Duer & Koch Paper Company will furnish 8,000 pounds of white bond paper at 24 cents. Mead Sales Company will furnish 80,000 pounds of poster paper at 7.32 cents and 99,600 pounds of white paper will be furnished at 7.15 cents.

The Mead Sales Company will furnish 10,000 pounds of white M.F. book paper at 6.96 cents and 10,000 pounds of newsboard Schmidt & Ault Company at $53.00 per ton. The same firm will also furnish 30,000 tons more of newsboard at the same price. R. P. Andrews Paper Company will also furnish white C. W. index paper at 7.61 cents and the same firm will also furnish 252,938 pounds of white sulphite index paper at 7.61 cents. Barton, Duer & Koch Paper Company will furnish 40,000 pounds of bristol board at 6.6 cents and 192,150 pounds of white book paper at 8.19 cents by the Fitchburg Paper Company.

Bulkley, Dunton & Company will furnish 40,000 pounds of wood manila paper at $4.75 per cwt. and 51,500 sheets of bristol board will be furnished by Barton, Duer & Koch Paper Company at $67.50 per M sheets. Walker, Goulard & Plehn Company will furnish 25,875 pounds of newsprint paper at $71 per ton and 196,356 pounds of machine coated paper at 7.04 cents by Walker, Goulard & Plehn Company. Mudge Paper Company will furnish 17,240 pounds of photo gelatin paper at 13.25 cents.

Ontario-Minnesota Changes

Four major changes in the management of The Ontario-Minnesota Pulp and Paper Company Limited, with mills at Fort Frances and Kenora, Ont., have been announced by R. H. M. Robinson, president.

D. M. McLeod, Kenora, vice president of the Canadian company since 1936, retires. Mr. McLeod, widely known in Canada and northern Minnesota, was vice president and general manager at Kenora from 1921 to 1936. He has engaged in logging and sawmill activities in the area since 1883.

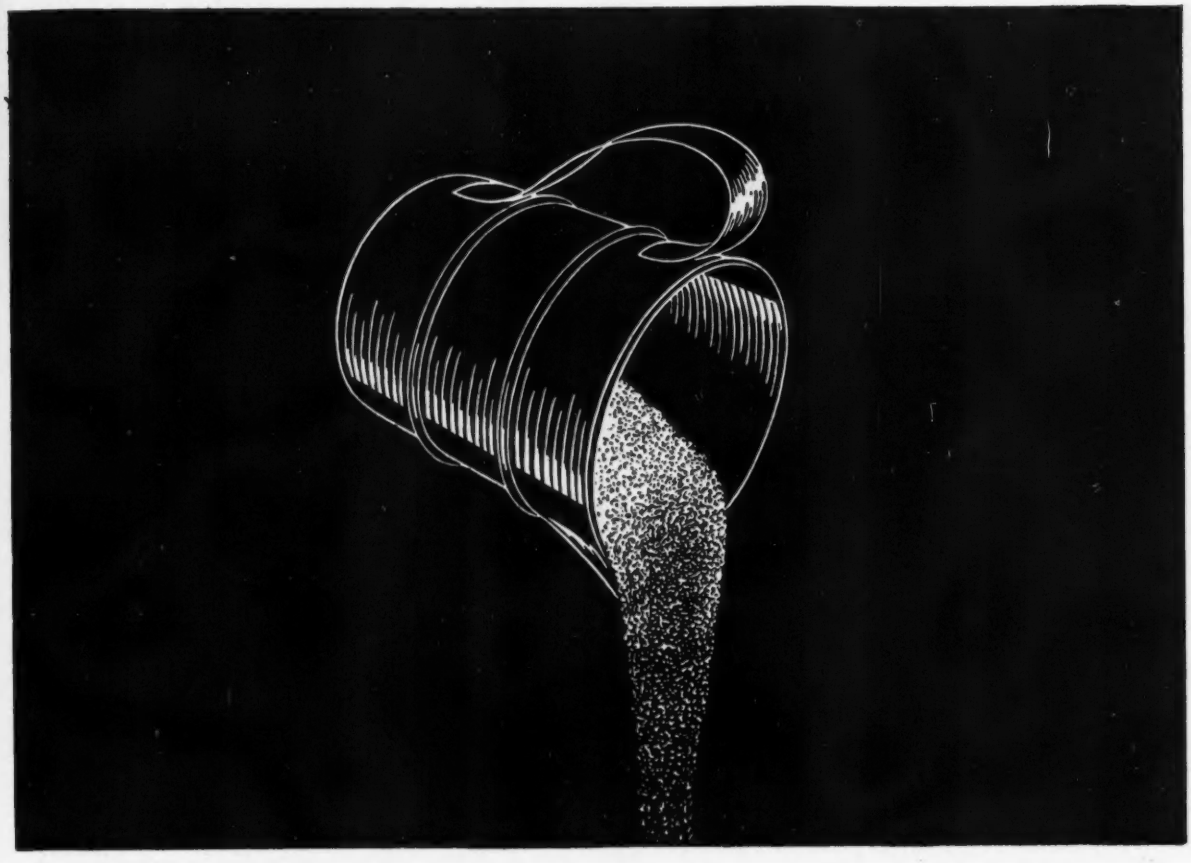
He will be succeeded by Ralph Bateman, Kenora, general manager since 1936. S. C. Stratton, who joined Minnesota-Ontario Paper Company at Minneapolis in 1932, and was transferred to Kenora in 1937, will become general manager in charge of Canadian operations. Mr. Stratton has served as assistant to the general manager since 1937.

At the company's Fort Frances mill, F. W. Woodman, general superintendent, will become resident manager. All changes become effective May 1.

The Peruvian Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 3, 1944—The Peruvian paper industry is virtually monopolized by two companies, according to a report received at the Department of Commerce. One firm, operating a plant at Paramonga, manufactures paper and cement bags. Products of the other firm, whose plant is located in the city of Chosica include paper, gray cardboard and asphalt roofing. Both plants have been modernized and expanded within the last year and new machinery installations are expected to raise their combined capacity from 9,000 metric tons recorded in 1943 to an estimated 14,000 metric tons in 1944.



The cup that cheers the paper-mill man

AS EASILY AS THIS, you can add "Lignasan" to your beater—*and control slime throughout the entire "wet" paper-making operation.* Three to five ounces per ton of fiber, dry basis, usually is ample for full protection in most mills.

With "Lignasan" on the job, no slime-forming organisms can survive to cause troublesome clogging of pipes and screens. Your system is kept *cleaner, more efficient.*

Many operators prefer to add the powder directly to the beater as a slug dose. Others prepare a solution of "Lignasan," and bleed it into the system wherever slime formation tends to be excessive. Either of these methods gives a fine degree of slime control at low cost.

In solution form, "Lignasan" is also used for preservation of laps or slush pulp during storage and transit. Here, 4 to 8 ounces per ton of fiber, dry basis, usually is enough to prevent mold attack and souring.

Fight profit-stealing slime! Get the facts today. Learn how "Lignasan" can be put to work in your plant to increase production and cut costs. Write our nearest branch office or E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

YOUR BLOOD TODAY CAN SAVE A LIFE TOMORROW

CONTROLS SLIME
PRESERVES PULP

Du Pont Lignasan

REG. U. S. PAT. OFF.

BACTERICIDE AND FUNGICIDE

DU PONT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending May 6, 1944

STOCKS

	High	Low	Last
A. P. W.	2⅝	2⅝	2⅝
Armstrong Cork Co.	37¼	36	37¼
Celotex Corp.	11½	11	11¼
Celotex Corp., pf.	17⅜	17⅛	17⅜
Certain-Teed Products Corp.	5	4⅞	4⅞
Certain-Teed Products Corp., pf.	59⅝	57	59¼
Champion Paper & Fibre Co.	24½	23¼	24½
Champion Paper & Fibre Co., pf.	109¾	109	109¾
Congoleum Nairn Co.	24	23	24
Container Corp. of America	23⅜	22½	23
Continenal-Diamond Fibre Co.	11¼	11	11½
Crown-Zellerbach Co.	16½	16	16½
Crown-Zellerbach Co., pf.	99½	98½	99
Dixie Cup Co.	15¾	15¾	15¾
Dixie Cup Co.—A.	45	44¼	44¼
Flintkote Co.	20⅝	18⅜	19⅜
Flintkote Co., pf.	107¾	107¾	107¾
Robert Gair	3⅝	3½	3⅝
Robert Gair, pf.	....	....	....
International Paper Co.	15¾	13¾	15½
International Paper Co., pf.	75¼	72¾	74⅞
Johns-Manville Corp.	91½	89	90½
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	36¼	36	36¼
MacAndrews & Forbes	26	26	26
MacAndrews & Forbes, pf.	....	....	....
Masonite Corp.	47¼	42½	46½
Mead Corp.	9⅛	8⅝	9⅛
Mead Corp., pf., A-6%	....	....	....
Mead Corp., pf. B-5½%	83	83	83
National Container Corp.	14¾	14½	14½
Paraffine Companies, Inc.	48½	48	48½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	14⅞	13¾	14¾
Rayonier, Inc., pf.	30¼	30	30
Ruberoid Co.	29⅛	29	29
Scott Paper Co.	40	40	40
Scott Paper Co., pf.	108	108	108
Sutherland Paper Co.	32	31½	32
Union Bag & Paper Corp.	10½	9¾	10¾
United Paperboard Co.	4⅝	4½	4⅝
U. S. Gypsum Co.	72¼	71	72¼
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	18⅞	17⅞	18⅞
West Virginia Pulp & Paper Co., pf.	106¼	106¼	106¼

BONDS

Abitibi Pulp & Paper Co. 5s '53	72	71¾	72
Celotex Corp. 3¾s '55	....	....	....
Certain-Teed Products Corp. 5½s '48	101½	101	101½
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	107¼	107	107
International Paper Co. 5s '47	....	....	....
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending May 6, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	32¼	32¼	32¼
Hummel-Ross Fibre Corp.	5⅛	5	5⅛
St. Regis Paper Co.	4½	4¼	4¼
St. Regis Paper Co., pf.	149	148½	148¾
Taggart Corp.	5⅝	5⅝	5⅝

BONDS

American Writing Paper Co. 6s '61	100	99⅛	99⅛

Arabol Mfg. Co. Elects Officers

At the annual meeting of common stockholders of the Arabol Manufacturing Company held on May 1, 1944, the following officers were re-elected for the term of another year: William A. Weaver, president and treasurer; Randolph P. Beiler, executive vice president; Raymond L. Grant, assistant treasurer; Carl O. Seitz, secretary; Henry E. Weingartner, assistant secretary; Marjorie B. Ernst, asst. sec.

Carl O. Seitz and Henry E. Weingartner, Secretary and Assistant Secretary, were granted military leaves.

Hinde & Dauch Profits Up

The Hinde & Dauch Paper Company and subsidiary for the March quarter reports a net profit of $301,820, or 71 cents a common share, against $241,467, or 54 cents a share, last year; net sales, $6,312,719, against $5,741,407.

Hold Conference at Albany

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., May 8, 1944—A conference of mill representatives from plants in this district and the Middle West was held here last week at which D. L. Pickering, of Lancaster, Ohio, president of the General Container Corporation, presided. The chief concern is still the problem of getting the trees out of the woods, according to Mr. Pickering. Manpower shortages and production problems continue as serious drawbacks to nearly all manufacturers. It was announced that the collection of waste paper has been an important factor in helping manufacturers meet present production totals but it is not enough to prevent a critical shortage. Attending the meeting were representatives from the Cleveland Container Corporation, the Dubuque Container Company, the Great Lakes Paper Box Company, the Canton Corrugated Box Corporation, the Niagara Corrugated Container Company, the General Container Corporation, and the Albany Corrugated Container Corporation.

Gair Co. Earnings Off

The Robert Gair Company and subsidiaries for the March quarter reports net profit, after $477,000 provision for taxes, was $133,591, equal, after preferred dividend requirements, to 69 cents each on 1,133,822 common shares outstanding. This compares with $154,199, or 86 cents a share in 1943, after $263,000 taxes. Net sales $6,561,439, against $5,936,367.

Union Bag Earns $423,236

The Union Bag and Paper Corporation reports as follows for the March quarter: Net income, $423,236, equal to 33 cents a share, compared with a deficit of $188,074 for first quarter last year; net sales, $9,485,930, compared with $7,562,428, an increase of 25 per cent.

N. P. T. Co. Nets $2.83

The National Paper and Type Company and subsidiaries for the six months to February 29 reports a net profit of $200,742, equal after preferred dividend requirements, to $2.83 each on 64,392 common shares, against $150,797, or $2.05 a common share, for six months to February 28, 1943.

J. P. Ingalls, Jr., Goes With Paper Firm

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 8, 1944—John Palmer Ingalls, Jr., formerly a corporal in the First Raider Battalion of the Marines, has been honorably discharged and is again associated with Ingalls, Cronin Company, paper merchants at 10 High street.

Ruberoid Profits Up

The Ruberoid Company for the March quarter reports a net profit of $155,415, or 39 cents a share, against $146,362, or 37 cents a share, last year; net sales, $6,883,178, against $5,592,823, a gain of 23%.

Dixie Cup Nets $2.46

The Dixie Cup Company for the twenve months to March 31 reports a net profit of $945,578, equal to $2.46 a common share, compared with $963,617, or $2.55 a share, in the twelve months to March 31, 1943.

MORE THAN 50 DIFFERENT

PARACOL*

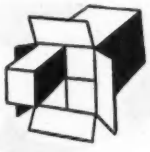
WAX EMULSIONS

for your papermaking problems

There are over 50 different emulsions in the Paracol series—each designed to answer effectively and economically specific types of papermaking problems.

Because of their wide range of properties, the Paracol emulsions permit virtually "tailor-made" selection. Choice of the correct Paracol is determined by many factors—involving where and how applied, and effect desired in the finished sheet.

Your PMC technical representative knows these many factors intimately—through our more than 15 years experience in making emulsions and applying them to papermaking problems. For further information on the use of Paracol emulsions in your operations, use the convenient coupon below.



WATERPROOF ★ GREASE RESISTANT ★ INK REPELLENT ★ TRANSLUCENT ★ BLOOD RESISTANT

Scores of paper mills throughout the country are using to their advantage the research knowledge and technical training of Hercules representatives. This helpful service is at your disposal for all your important papermaking problems.

HERCULES

CHEMICALS FOR INDUSTRY

*Reg. U. S. Pat. Off.

PMC

HERCULES POWDER COMPANY
INCORPORATED

Papermakers' Chemical Department,
962 King Street, Wilmington 99, Delaware

Gentlemen:

My wax problem is.....

Please send me information on.....

Name.....Title.....

Firm.....

Address.....

PI-43

Files Suit Against Bedford Pulp Co.

The Office of Price Administration filed suit in Brooklyn Federal Court, May 6, to restrain a paper mill from selling paper board used in the manufacture of paper boxes at over-ceiling prices and to cancel contracts made by the mill with seven paper box manufacturers, it was announced by Daniel P. Woolley, Regional OPA Administrator.

Federal Judge Mortimer W. Byers in Brooklyn Federal Court signed an order temporarily restraining the Bedford Pulp and Paper Company, Inc., with headquarters at Borden and Review avenues, Long Island City, Queens, from selling paper board at over-ceiling prices.

Papers filed in court charged that contracts entered into by the Bedford Company and seven paper box manufacturers relating to the method of payment for paper board was in violation of OPA regulations. "Complaints have been received from various paper box manufacturers that the Bedford Company has refused to continue to supply them with paper board unless they enter into a special type of contract," Mr. Woolley said. "It is charged by OPA that these contracts, which run fourteen pages long and are filled with whereases and heretos, spell out evasions of OPA's regulations."

Papers in the court action were filed by John D. Masterton, New York Area Chief OPA Enforcement Attorney, and Julius L. Schapira, OPA Enforcement Attorney. The temporary restraining order becomes effective five days after it is served upon the defendants.

It was charged, according to the papers filed in court, that the contracts obligated the seven purchasers to put up cash security, referred to as "maximum deposits" over and above the OPA ceiling price, which at the end of two years would amount to $750,000.

The contracts obligated the purchasers to take a certain number of tons of paper board per month for a period of five years and seven months, and to put up cash security at the rate of $25 per ton on the first two years' deliveries. The contracts further provided that, if any purchaser did not live up to its terms, he forfeited the "deposits." The deposits were to bear 2% interest a year, and were to be returned to the purchasers by crediting them with $5 per ton upon deliveries beginning with the third year.

The seven paper box manufacturers named as defendants along with the Bedford Company were: Archbilt Corrugated Products Corporation, 51-18 Grand avenue, Maspeth, Queens; Shelton Manufacturing Company, Inc., 42-24 Orchard street, L.I.C., Queens; Grand City Container Corporation, 622 West 57 street, New York City; Industrial Container Corporation, 50 street & 2 avenue, Brooklyn, N. Y.; The Martin Brothers Box Company, 39 Blucher street, Toledo, Ohio; Star Corrugated Box Company, Inc., 55-15 Grand avenue, Maspeth, Queens; J. M. Stone & Sons, 4200 West 42 place, Chicago, Ill.

The National Container Corporation, with offices in Long Island City, which was reported to have acquired the Bedford Company recently, also was named as a defendant.

Eli de Vries Opens Offices

Eli de Vries, who recently severed his connections with Parsons & Whittemore, Inc., has established his own offices at 220 East 42nd street, New York 17, N. Y. The telephone number is Murray Hill 2-9137.

Drying of Lithographic Ink

"The Drying of Lithographic Ink" is the title of a 70-page bulletin recently issued by the Lithographic Technical Foundation. In two sections, it includes first a discussion of practical drying troubles and their remedies, and second a description of the experimental work done in studying certain factors that heretofore have not been well understood.

Under the head "Basic Principles of Drying," the individual effects of pigments, reducers, paper, temperature, moisture, fountain-water acidity, and availability of oxygen are discussed. An analysis follows of thirteen typical pressroom ink-drying difficulties, with causes and preventive measures. Two troubles related to the use of driers, namely, bleaching of iron blues and chrome greens, and discoloration of printing plates are also described.

The discussion of experimental work and results contains much data of interest to ink and paper chemists and to chemists in the lithographic industry. Tables and curves are included to show the effects of the principal factors on the drying of black and colored inks. Methods of conducting the tests are described briefly, including the use of a new automatic Drying Tester developed to facilitate the work. It is shown that all of the important factors must be properly adjusted to produce satisfactory drying, and that a variation in any one of them may result in an expensive delay or reduced quality of product.

Of particular interest is the fact that certain colors require considerably more drier at high than at low humidities, while others do not. Excessive humidity and press moisture only retard drying, while too much acid in the fountain water destroys the drier. Little correlation was found between measurable properties of uncoated papers and rates of ink drying, but on coated papers the drying rate was found to be closely related to absorptivity and pH value of the coating.

The research on drying of inks was made possible through the donation of graduate research fellowships to the Foundation by the Sinclair and Valentine Company. Copies of the bulletin are, as usual, being sent to Foundation members and subscribers without charge. Others may obtain it at $2.50 per copy from the Lithographic Technical Foundation, 220 East 42nd street, New York 17, New York.

Paperboard Men To Meet

A meeting of the membership of National Paperboard Association is being called to be held at The Claridge Hotel, Atlantic City, N. J., Wednesday, May 17, and Thursday, May 18, 1944. A meeting of the board of directors will be held Wednesday afternoon, May 17.

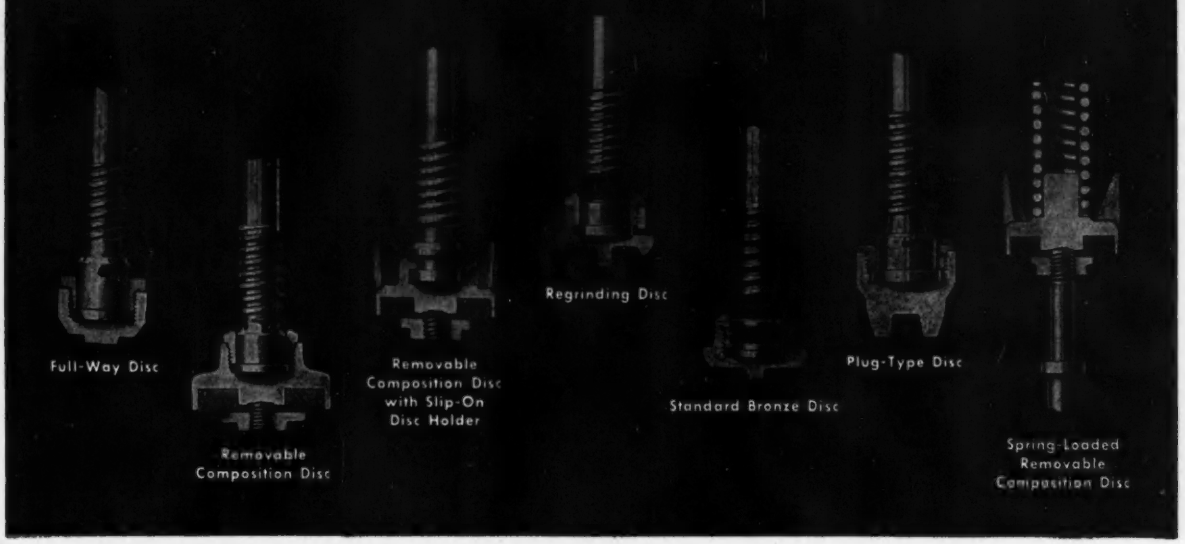
In view of the many important matters facing the paperboard industry at this time and the urgent demands being placed upon the industry to supply more and more paperboard for the war effort, it is felt that it is very necessary that a meeting be held at this time.

The sessions will be presided over by W. Irving Osborne, Jr., president, Cornell Wood Products Company, Chicago, Ill., the president of the association.

Leaves Lewis-Brownville Sales

Erwin Brown, who covered the New York Metropolitan and Pennsylvania and Southern territory for Lewis-Brownville Sales, Inc., has severed his connection with the company.

GLOBE VALVE DISCS



WHICH DO YOU PREFER?

They're all in the KENNEDY line

● Precisely the right discs for all regular requirements are included in the large Kennedy line of Bronze Globe and Angle Valves. Whether the service involves high temperature, high pressure, extreme throttling, severe wear, or other operating conditions, you will find a Kennedy disc design that assures best results and longest possible wear. Kennedy Bronze Check Valves, too, are made with a variety of discs for a wide range of requirements.

While it may be difficult for you to obtain bronze valves today, it will be advisable for you to bear in mind the exceptionally large extent of Kennedy Valve designs, for the Kennedy line of iron body gate, globe, angle and check valves is similarly extensive. All of the many types of Kennedy Valves and Pipe Fittings are described in a comprehensive and conveniently arranged 240-page catalog which every engineer should have. Your copy will be mailed promptly upon request.

THE KENNEDY VALVE MFG. CO.

ELMIRA • NEW YORK

KENNEDY *valves . . . pipe fittings . . . fire hydrants*

TAPPI Notes

Richard C. Ruffer is now plant superintendent for the American Cyanamid & Chemical Company, Kalamazoo, Mich.

S. C. Nevins is now chemist for the Armstrong Cork Company at Lancaster, Pa.

Edgar A. Lauring, formerly of the Minnesota and Ontario Paper Company is now in the Army at Camp Sibert, Ala.

W. M. Ebersole, formerly of the St. oJe Paper Company is now in the Army at Camp Ellis, Ill.

Roland Wilbur, formerly of the Ecusta Paper Corporation is now production manager for the Crossett Paper Mills, Crossett, Ark.

Arthur M. Worthington, Jr., formerly of Beach & Arthur Paper Company is now division chemical engineer for the American Tissue Mills, Holyoke, Mass.

A. E. Conklin is now personal manager of C. A. Reed Company, Williamsport, Pa., and is still in charge of the laboratory.

Victor Burstein, formerly of the Institute of Paper Chemistry is now chemist for the North Carolina Pulp Company, Plymouth, N. C.

John F. Hicks, formerly of the Lehon Company, is now development engineer for the Panelyte Division, St. Regis Paper Company, Trenton, N. J.

George H. Pringle is now division engineer in charge of engineering, steam and power for the Chillicothe Division of the Mead Corporation.

J. Carl Schmidt has been appointed manager of the Philadelphia sales office of the Dyestuffs Division of E. I. du Pont ne Nemours & Co.

Peter J. Abel has been granted a leave of absence by the Stickle Steam Specialties Company to serve the War Production Board as principal industrial specialist (Chief, Regulation Equipment Section), Radio and Radar Division, Washington, D. C.

Clyde A. Benson has joined the staff of Arno W. Nickerson and will be engaged in development work in connection with protective packaging for frozen foods, dehydrated foods and dairy products. Mr. Benson is a chemical engineer, graduate of the Massachusetts Institute of Technology and for the past 16 years has worked in the paper industry.

The offices of Arno W. Nickerson, consulting engineer, were moved to 441 Lexington avenue, New York 17, N. Y., on May 1st.

Ask Support for New York Fund

A quota of $37,500 has been accepted by the paper division as its share of the Greater New York Fund's 1944 Campaign at a luncheon meeting last week at the Union League Club. Plans were made for active participation by the industry in the drive, now in progress.

Roy K. Ferguson, president of the St. Regis Paper Company, and chairman of the campaign, called on industry leaders to spread the fund's urgent message to every firm engaged in paper manufacture, stressing the importance of preserving the health of its employees to assure maximum production of paper — a vital war material. "With approximately 250 firms in this field, we should succeed in meeting our quota," he stated.

Associated with Mr. Ferguson, as vice-chairman, is A. B. Helfrich of the same company.

The committeemen appointed at the meeting pledged their full support to the campaign.

Philadelphia To Hold Outing

The Philadelphia Paper and Cordage Association will hold its annual outing on June 15 at the Manufacturers Country Club, Oreland, Pa. W. J. Culverhouse, manager of the Philadelphia sales office of Fort Howard Paper Company, and president of the association, announces the appointment of Carroll Gardner of Groveton Paper Company chairman in charge of entertainment. Mr. Gardner is a recognized authority on entertainment de luxe and can be counted on to present a program that will long be remembered by all those who are privileged to attend. Steve DeFarges, of Jessup & Moore Paper Company, chairman of the golf committee, states reservations are being received that far exceed their expectations, and adds if the proverbial sunny skies prevail it will long be a day to be remembered.

E. R. Southouse Resigns

E. R. Southouse, after twenty-one years' association with Parsons & Whittemore, Inc., 10 East 40th street, New York, eight years of which were spent as manager of their London export office and thirteen years as first vice president and director in New York, resigned from the company April 18. Mr. Southouse's duties with the company have been many and varied involving worldwide travel, both buying and selling paper and pulp, administrative and export management and the handling of foreign and domestic newsprint contracts in the United States. Mr. Southouse's resignation from the company was under the most pleasant circumstances. His plans for the immediate future are uncertain.

Organic Chemistry Simplified

The Chemical Publishing Company has recently published a book by Rudolph Macy of the Chemical Warfare Service and formerly of the Department of Chemistry, University of Maine, entitled Organic Chemistry Simplified (431 pages). The book was written for the benefit of individuals in industry who being confronted with wartime chemical problems need a text that will introduce them to organic chemistry in the easiest and most direct way. It is a useful refresher for chemists and is suitable for home study by those having only an elementary knowledge of chemistry. Although the subjects are the same as those covered in any general textbook on the subject, the method of presentation is new and relatively simple. Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York 17, N. Y., at $3.75 per copy.

Space-Saving Flexible Couplings

Farrel-Birmingham Company, Inc., of Ansonia, Conn. and Buffalo, N. Y., has released a new eight-page bulletin describing Farrel Manger Couplings.

These couplings are designed for applications where space limitations make a close-coupled connection necessary or desirable. By bolting the coupling flange directly to a flywheel, brake drum or similar component, complete flexibility is provided between driving and driven units in half the space occupied by an ordinary coupling. And, in addition, no dummy, pilot or stub shaft is required. The Manger Coupling is simple in construction, easy to install and align, and requires practically no maintenance.

METHYL 4BPX CONC.

No! We're not playing a guessing game. There wouldn't be any point to it. Calco's Methyl Violet 4BPX Conc. is too well known to Paper men as the industry standard!

And why? Because it's the outstanding violet for money value. Because it's the strongest tinctorially at lowest cost. Because it possesses good solubility and dyeing properties. Because it can be used as a base color or shading color for practically all blue, violet or gray papers. Particularly when economy is of paramount importance to the job.

Ask your H. & M. representative to give you the specifications on Methyl Violet 4BPX Conc. as a beater color or calender stain.

HELLER & MERZ DEPARTMENT

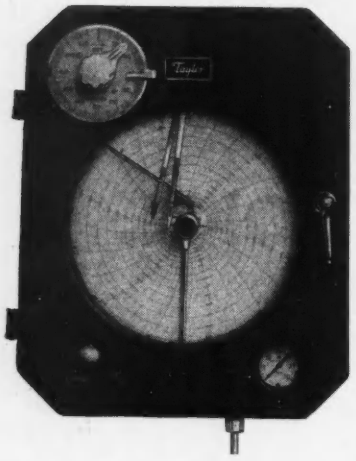
CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

BOUND BROOK, N. J.

NEW YORK • CHICAGO • BOSTON • PHILADELPHIA • PROVIDENCE • CHARLOTTE

Taylor Process Timing Mechanism

The Taylor Process Timing Mechanism for Fulscope Temperature or Pressure Controllers, production of which was suspended soon after the beginning of the war, is again available. This will be welcome news to batch process industries such as canners, vulcanizers, etc., the quality of whose products depends upon positive time control of either temperature or pressure.



This device is built into either the single duty Fulscope Recording Temperature or Pressure Controller and functions as follows. The process is started manually by adjusting the instrument for the desired time period. Timing begins, not immediately, but when the apparatus reaches the desired control point, no matter how long or short a time that may take. At the end of the timed period the Process Timing Mechanism automatically ends the process.

Several variations of the instrument are available so as to assure maximum usefulness over a wide range of specific applications. Because it is designed for use in the Fulscope case, the user enjoys the advantages of the five interchangeable forms of Fulscope control, fixed high sensitivity, adjustable sensitivity, adjustable sensitivity with automatic reset, adjustable sensitivity with pre-act, adjustable sensitivity with pre-act and automatic reset. The Taylor Instrument companies, Rochester, N. Y., will furnish detai'ls upon request.

Pulp and Paper Training Course Ends

The sixteenth and final weekly session of the War Training Class in the Chemistry of pulp and paper making was held on Tuesday evening, April 18th at St. Joseph's College, Philadelphia, Pa. The course was attended by about forty men and women who held degrees from thirty-three colleges and were employed by twenty companies in and near Philadelphia. The greater proportion of the students were employed by companies who do not make paper and were interested in the course primarily because their work related to service to the paper industry. The course was tuition free and was offered by the U. S. Office of Education, Engineering, Science and Management War Training Program.

The lectures with a few exceptions were given by A. H. Nadelman, formerly of the Valley Forge Laboratories and the Glassine Paper Company. They covered the chemistry of cellulose, pulps, bleaching, loading, coloring, sizing, testing and water. Lectures on equipment and sizing respectively were given by C. M. Connor of the Valley Forge Laboratories and Miss R.M.K. Cobb of the Lowe Paper Company. Sutermeister's Chemistry of Pulp and Papermaking was the text used during the course. Much credit is due to the effort of Dr. Nadelman who devoted five hundred hours to preparing the lectures. R. G. Macdonald, Secretary of the Technical Association attended the final lecture and commended Dr. Nadelman for his unusually fine work in preparing his lectures so that the subjects were adequately covered in the limited time available by skillful presentation of the essentials and guidance to the most accessible and authenticated sources of information on each subject.

Goes With Wilcox-Walter-Furlong

Announcement was made last week by Thomas S. lFurlong, president of the Wilcox - Walter - Furlong Paper Company, that Robert Porter, who is now serving in Washington as deputy director of the War Production Board Procurement Policy Division, has been appointed a vice president of this well known Philadelphia paper distributing house. Mr. Porter, who has been in direct charge of coordinating all paper purchases of governmental agencies for the past two and a half years, is planning to conclude his WPB association on May 15, although he will continue to serve as a special consultant to the director of the division.

In addition to the activities he will assume in the Philadelphia paper fied, Mr. Porter is to be in charge of a Washinlgton office which Mr. Furlong said his company will establish on or about July 1. He will spend part of his time each week in Washington.

Mr. Porter comes to the Wilcox-Walter-Furlong business with a broad background of paper knowledge. Prior to joining WPB he had filled the important post of purchasing agent of the nationally known Provident Trust Company of Philadelphia since its incorporation in 1924, and from 1920 to 1924 filled the same post at the Provident Life & Trust Co. of Philadelphia. Mr. Porter during his purchasing career devoted much time to the study of pulp fibres, paper grades and their application to end use. And that was long before "end use" became widely known in paper terminology.

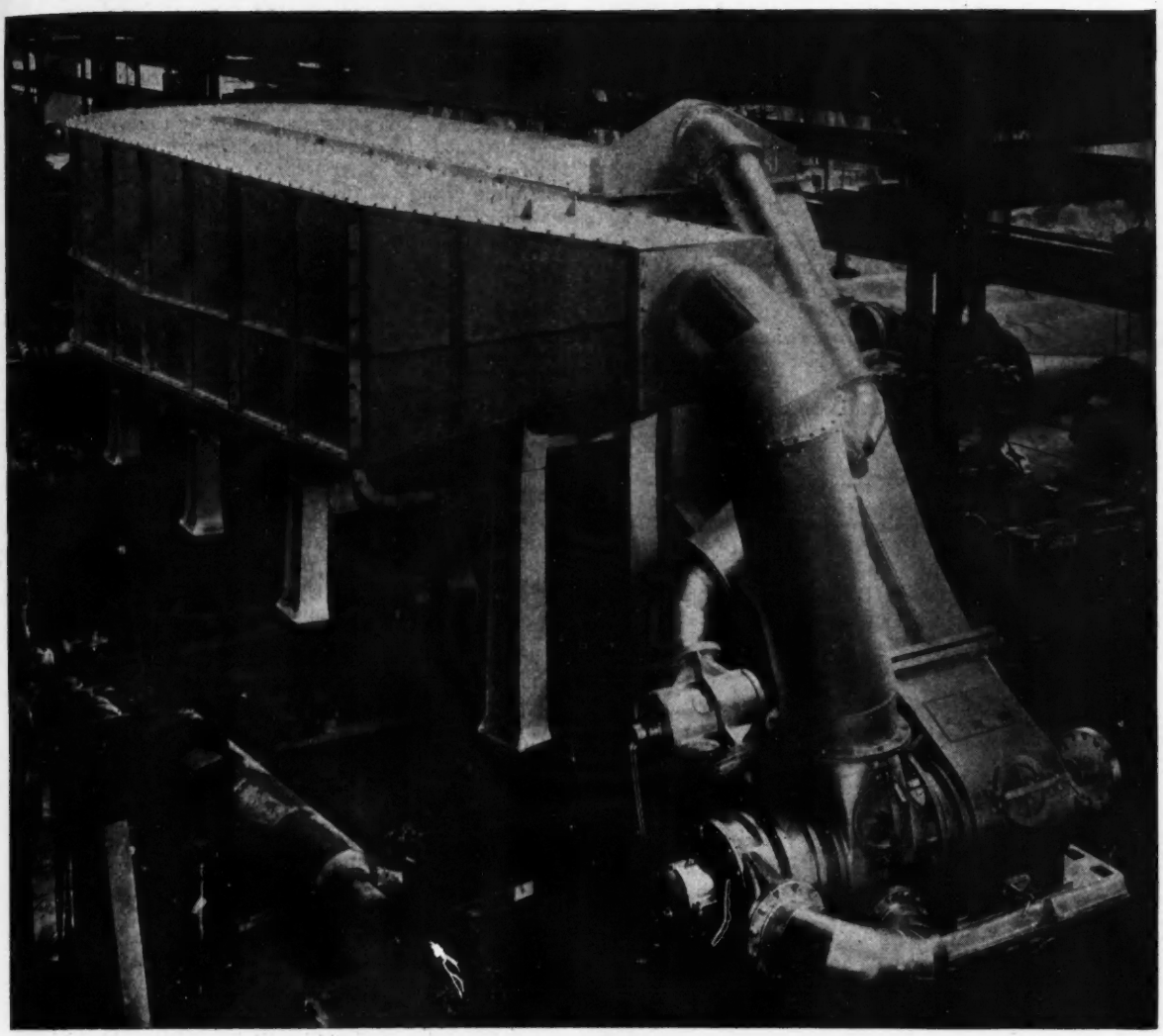
Kalamazoo TAPPI Discusses Waxes

J. C. Dean, Process Products Division, Socony-Vacuum Oil Company, addressed the May meeting of the Kalamazoo Valley Section of TAPPI on the subject of Micro-crystalline Waxes. He discussed their manufacture, use and availability. The meeting was held at 6:30 P.M., May 4, 1944, at the Columbia Hotel, and was attended by the following guests and members: D. D. Bachelder, Truman F. Barbier, P. W. Bartholomew, Fred L. Chappell, A. W. Cole, W. G. Curry, John C. Dean, G. F. Des Autels, B. E. Freeman, R. C. Germanson, D. P. Hatch, J. A. Heenan, C. E. Henton, P. S. Hewett, C. J. Kaiser, W. A. Kirkpatrick, M. P. Kistler, W. Kottman, John H. Lyons, Gordon M. Markle, R. T. Mashburn, D. W. McArthur, Harley E. Nelson, R. C. Ruffer, A. L. Sherwood, W. S. Taylor, Floyd E. Thomas, F. A. Van Liew, Dan Ver Meulen.

Bids Asked for Currency Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 10, 1944—The Treasury Department will receive bids on May 23 for paper required for currency amounting to 110,000,000 sheets or about 1325 tons, and for 54,500,000 sheets of about 1050 tons for paper for public debt se-



"Stainless" LICKS ABRASION TOO!

In beaters and other refining equipment there is some corrosive action, but another problem, as you know, is abrasion.

ARMCO 18-8 Stainless Steel is the logical metal for such applications since it resists *both* abrasion and corrosion. Circulation of stock is speeded because of its smooth surface. There is no metallic contamination of pulp from stainless steel. (When bleaching or dyeing is to be done in beaters, a different analysis of stainless steel is desirable for this purpose.)

Maintenance is no problem when you use this tough, corrosion-resistant metal. It is exceptionally strong, and easy to clean and keep clean. Weekly cleanings make it almost impossible for bacteria or slime to get a toe-hold.

Fights Corrosion, Abrasion

Corrosion *and* abrasion are the big threats to screening equipment, pulpers, charging tanks, deckers, linings, and thickeners. Here ARMCO Stainless Steels will help give you low-cost production of high-quality papers and board. Check your plant now for places where this strong, durable metal can cut maintenance costs for you after the war. The American Rolling Mill Company, 1701 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

STAINLESS ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

B. C.'s Forest Products Lower

Value of British Columbia's forest products fell in 1943 from $124,720,000 to $118,434,000, according to the annual report of the B.C. forest branch.

Lumber production last year was valued at $66,520,000 against $67,150,000; pulp and paper $25,597,000 compared with $27,723,000; shingles $8,332,000 against $12,622,000; logs exported $1,555,000 against $2,618,000.

Only large increase was in cordwood which was valued in 1943 at $4,485,000 compared with $2,165,000 in 1942. Christmas trees rose from $162,000 to $227,000.

Value of aggregate 1943 production compares with $86,786,000 average for the last 10 years, and is very slightly below 1941.

Timber scale in B.C. last year was 3,078,766,000 feet, a loss of 93,873,000 feet compared with 3,172,640,000 in 1942.

Newsprint production fell from 252,559 tons to 211,692 against a 10-year average of 241,000. Other paper production was down from 74,915 to 63,026 tons, and up from a 10-year average of 52,000 tons.

The report pays tribute to the only 3 per cent loss in timber cut throughout B.C. There was a five per cent loss in value. Part of the paper production loss was due to diversion of effort to producing airplane spruce.

Douglas fir formed 40 per cent of the cut, hemlock passed cedar in volume, accounting for 19 per cent; cedar was 16 per cent and spruce 11 per cent. Crown-grant lands on Vancouver Island provided 30 per cent of the grand total.

Hugh Hodgins Heads Forestry Dept.

Pacific Mills Limited, Ocean Falls and Vancouver, B. C., announce the appointment of Hugh Hodgins as head of its new department of forestry.

As an important part of a long-range program this company is placing its forest holdings in B. C. on a managed basis that will assure adequate supplies of pulp timber for its substantial operations. Work of the department will include wood utilization, studies on timber growth, silvi-culture and sustained yield planning. Mr. Hodgins is a U.B.C. graduate who has been 16 years with the forest branch.

L. L. Malm Goes With I. R. C.

L. L. Malm has joined the technical staff of Industrial Rayon Corporation at Cleveland. A graduate of the University of Colorado, Mr. Malm has spent twenty years in chemical engineering, production and development work in this country and in South America. Until recently he was sales manager of the Swenson Evaporator Company. He is a member of the American Institute of Chemical Engineers, the Technical Association of the Pulp and Paper Industry, and the Chemists' Club of New York.

Canadian Paper Association Moves

The Canadian Pulp and Paper Association has moved its general offices to room 2279, Sun Life Building, Montreal, Que. The offices of the Technical Section, the Woodlands Section and the Pulp and Paper Research Institute, will remain in the Institute Building, 3420 University street, Montreal, Que. The telephone number for all offices remains unchanged, MArquette 6146.

Government Paper Needs Are Heavy

More than two-thirds of America's pulpwood goes either directly to war or into home front activities which are necessary to support a war economy, according to a survey just completed by the WPB Forest Products Bureau and the Department of Commerce Pulp and Paper Unit.

While citing the overlapping of military and civilian uses of paper and paperboard, the survey classified the end uses of pulpwood into three groups as follows:

Class 1—Used directly by Governmental agencies and war plants for war purposes; 35.8%.

Class 2—Used to maintain a war economy on the Home Front; 32.9%.

Class 3—Used to maintain a civilian economy; 31.3%.

Farmers, as the second largest users of pulpwood products, are included in the Class 2 group of essential home front users of paper and paper board.

Also included in Class 2 are newspapers and periodicals although the report points out that most newsprint comes from Canada and the survey deals only with consumption of domestic pulpwood.

Newspapers and periodicals, the Department of Commerce document stated, "play a major role and predominantly support the war economy. The tonnage they use is relatively small in terms of total United States production of paper and consumption of pulp. Newspapers and periodicals combined consume about 7.5% of the total production of paper and paper board and 10.9% of the total consumption of pulp."

More than 68% of the container board made of pulpwood goes directly into war uses and an additional 11.5% into essential home front industry. Thus only 20.3% of this important type of pulpwood product is consumed for civilian uses, according to the survey.

Some paper and paper board specialties, many of them developed to meet wartime needs, are all-out for war. For instance, 82.4% of the container board and jute liner used in V-boxes are in Class 1. In the same war-use group 85.8% of the kraft liner, 82.7% of the B-Box chip liner, and 62.5% of resin impregnated paper.

Almost 99% of the map and chart paper made in this country goes directly to war as does 72.6% of the asphalt and creping paper.

Oddly enough 61.1% of the fine bond and writing papers are used by the armed services, Governmental agencies and war plants. Another 17.8% is consumed on the home front "to maintain a war economy." Only 23% goes to civilian industry.

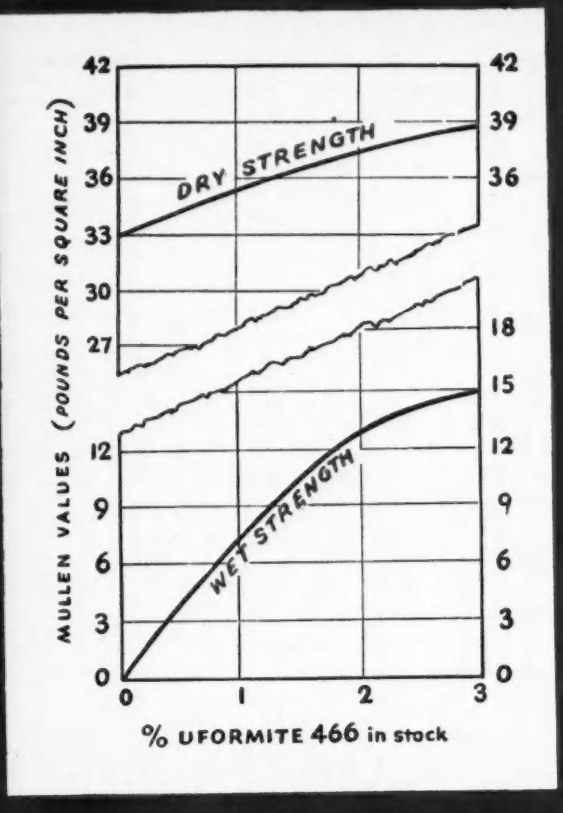
Over half of the building board paper is used directly for war and another 41% for war-time industry, leaving but 6.5% for civilian use.

Absorbent paper is divided thus: for war 52.2%, for the home front, 17.6%; and for civilian use, 30.2%. Only a few items, such as sanitary and tissue papers, are still predominantly for civilian use although they, too, have large war-use consumptions. Over half of the paper towels, which is a sanitary paper, is used directly for war.

Harvey D. Humphreys Dead

Harvey D. Humphreys, manager of the Sorg Pulp & Paper Company's plant at Port Mellon, B. C., dropped dead recently in the office of R. H. Tupper while on a business visit to Vancouver.

Get wet strength increases like these with UFORMITE 466 added at the beater



EFFECT OF UFORMITE 466
ON ROSIN SIZED KRAFT STOCK
(Resin added directly to beater)

IF you are looking for a simple, economical solution to your wet strength problem, investigate these features of UFORMITE 466, a unique urea formaldehyde resin.

1. Greatly increased wet strength even at low resin concentrations, as can be seen from the graph above. Similar wet strength increments can be obtained with sulfite stocks.

2. Improved dry physical properties as measured by mullen, tensile and fold test.

3. Simplicity of use — no aging or pretreatment of UFORMITE 466 solutions is required.

4. Application directly to the beater — no additional mixing or application equipment.

5. Infinitely water dilutable, assuring uniform dispersion of the resin in the stock.

6. Normal additions of alum offer sufficient catalytic action for the development of maximum physical properties.

7. UFORMITE 466 imparts no color, odor, or taste to the finished sheet.

UFORMITE 466 is a proved resin, available in quantity for your requirements. Ask for full details and testing samples. Satisfy yourself as to the low-cost, efficient performance of UFORMITE 466.

UFORMITE *is a trade-mark, Reg. U. S. Pat. Off.*

NEWER DEVELOPMENTS IN SYNTHETIC RESINS

- **PAPER RESINS**
  Liquid and powdered types
  ...for weatherproof paperboard
  ...for increasing wet strength
  ...for laminating work
- **RESIN ADHESIVES**
- **COATINGS RESINS**
- **ION EXCHANGE RESINS**
- **PLASTICIZING AND MODIFYING RESINS**

If you want assistance in any of these synthetic resin applications, our technical staff will be glad to study your problem without obligation.

3 awards to The Resinous Products & Chemical Company and its associated firms, Rohm & Haas Company and Charles Lennig & Company.

THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA, PA.

To Manage Phenol Plastics

Henry H. Reichhold, founder, owner and chairman of the board of Reichhold Chemicals, Inc., Detroit, Mich., has announced that Harry Kline, who joined the RCI organization in January of 1943, was recently made manager and technical director of Phenolic Plastics Division.

Mr. Kline's department is concerned exclusively with phenolic plastic resins, phenolic laminating and impregnating "varnishes," molding compounds, phenolic resins for brake linings, phenolic resins for

HARRY KLINE

grinding wheels, phenolic resins for plywood and other adhesive purposes, phenolic casting resins and various other phenolic compounds and compositions, all of which are now being made and marketed by Reichhold Chemicals.

Prior to his affiliation with RCI, Mr. Kline spent nearly twenty years with the Bakelite Corporation, specializing in research and development work on phenolic resins and compounds.

To Be Agent for Scofield Products

Gilbert J. Scofield, Inc., has announced the appointment of the Sandy Hill Iron and Brass Works of Hudson Falls, N. Y., as exclusive agent and manufacturer of Gilbert Scofield products.

By the terms of the agreement with Mr. Scofield, Sandy Hill Iron and Brass Works has the sole right to manufacture and sell the widely known inventions of Mr. Scofield in the paper industry—notably the Scofield Automatic Felt Conditioner, the Scofield adjustable-head Venturi-type suction extractor and the Scofield wire cleaner.

Scofield products have been known for many years in the paper industry. Hundreds of installations have been made in mills throughout the United States, Canada, England and Australia, and they are the result of a decade of development. Scofield conditioners, extractors, and cleaners are now in use on machinery producing various grades of paper products.

Since he was 24 years old, Gilbert J. Scofield has devoted his entire time to the development of new products, and the successful invention of various types of machinery. He did not seek a record number of inventions and patents, but preferred to prove out the successful use of one product before moving on to another.

Mr. Scofield developed one of the first successful dry plate friction clutches for automobiles, and has patents to his credit in power transmission machinery.

When his attention was directed to paper making machinery, Mr. Scofield says he found a great need for automatic washing of felts during production, as well as improved methods of suction extraction from felts, particularly to give increased life and tonnage from felts, lower cost per ton of paper, and more uniform grade of production.

Because of Mr. Scofield's contribution to conservation of paper stock and felts through the conditioner, he was issued a special permit for building new equipment months ago, when war needs held up other machinery production.

The Scofield suction pipe or extractor uses a method which is scientifically correct and thoroughly practical for stationary suction effect. The suction orifice is venturi in form. Suction force is with the travel of the felt or wire at the point of greatest seal, thus relieving resistance and the strain of suction braking action on the felt or wire.

The Scofield wire cleaner is hand operated, for use on cylinder mould or Fourdrinier wires. Turning a hand wheel moves a heavy vapor spray to points desired, and is efficiently controlled to operate on streaks.

"I am happy in this new arrangement with the Sandy Hill Iron and Brass Works," said Mr. Scofield. "Through their fine manufacturing facilities and their sales organization, I will be left free for development work."

Protective and Decorative Coatings

John Wiley & Sons have issued Volume IV of Protective and Decorative Coatings, edited by Joseph Mattiello, vice president and technical director of the Hilo Varnish Company (419 pages, 6 x 9). The previous volumes covered I. Raw Materials for Varnishes and Vehicles, II. Raw Materials—Pigments, Metallic Powders and Metallic Soaps and III. Manufacture and Uses. Volume IV presents the most important subjects concerned with pigmented coatings, both during and after manufacture, and in the dried film. Each of the twelve chapters is written by an expert in the fields of theoretical and practical aspects of wetting, theory of grinding, color, consistency, hiding, adhesion of dried coatings, absorption, permeability, water resistance, and structure of organic surface coatings, livering of printing inks, miscroscope in the paint and varnish industry, high vacuum technology, emulsions, and ultraviolet absorption studies of drying oils.

This volume, although not devoted to paper coating covers many of the fundamentals applicable thereto. The method of presentation followed in the four volumes is a continuation of new trend in technical publishing wherein an editor brings together the most authentic and reliable information in a rapidly developing field by having specialists handle the separate subjects rather than to have a single author attempt to cover a large field when he is actually fully informed on certain segments of it. A number of books have been prepared in this way during the past few years and are more useful because of this technique.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., at $5 per copy.

IT PAYS to use Monel in the fabrication of large diameter paper mill stock lines.

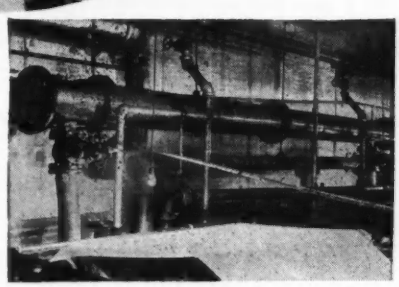
Here's proof . . . in this typical experience of a company that is always alert to the necessity of protecting the quality of their paper.

1 At the Hammermill Paper Company, a non-ferrous pipe line conveying white water from hypochlorite bleached pulp washers failed in 2 years. It was replaced by a Monel line . . . which is still good *after 12 years' service.*

2 Because Monel resists corrosion by white waters and stocks . . . and, in addition, is strong and stiff . . . the sheet Monel used for the new line had to be *only half as thick* as the metal formerly used.

3 As a result of this satisfactory performance, Hammermill installed its *third* Monel stock line and receiver from hypochlorite bleached pulp washers to wet machines in 1939.

4 This line was readily fabricated and welded by the mill's own men, using 14-gauge sheet. The Monel welds were left "as-welded" since they do not require heat treatment or special processing to assure maintenance of corrosion resistance.

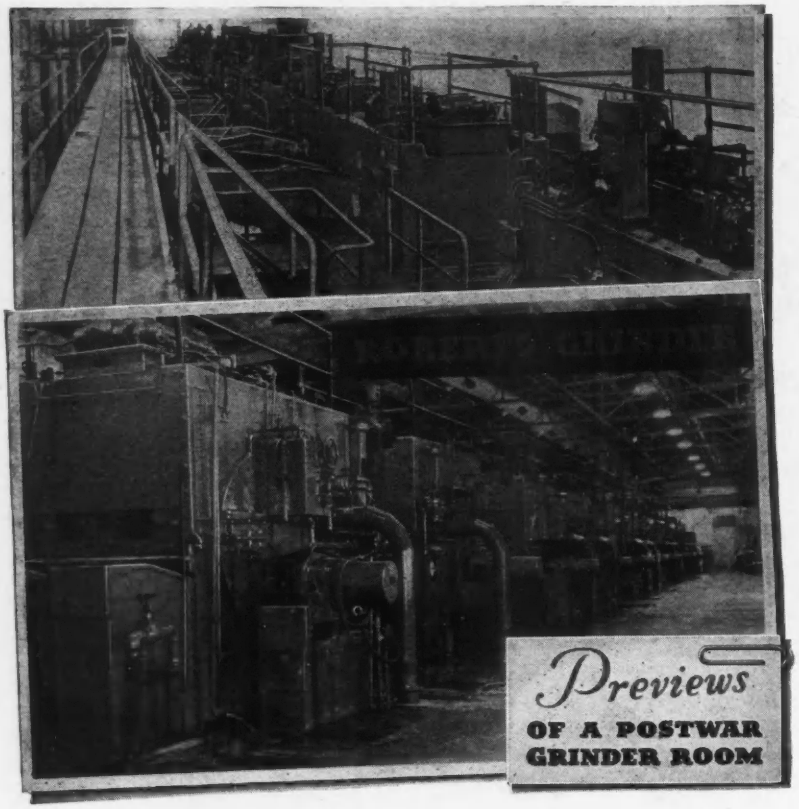


Twelve-inch diameter Monel stock line shown in upper photo feeds hypochlorite bleached pulp from the washer to the 10" diameter Monel receiver in wet machine room. The lines were fabricated and welded from .078" (14-gauge) Monel sheet in the mill's own shop.

Today Monel is produced for war requirements and for essential production and maintenance needs where corrosion resistance, strength and rust-immunity are indispensable.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N. Y.

Monel



This grinder room was completed just before wartime restrictions halted further construction of the Roberts Grinder. It has offered a good opportunity to examine and compare the operation and production of this new, continuous, high-speed pulpwood grinder. Not only is tonnage increased and manufacturing costs cut, the pulp is more uniform and of higher quality. The performance has been so outstanding that a number of mills are preparing to install Roberts Grinders as soon as materials and manpower are released.

The floor view shows ten of the eleven grinders in this room with a capacity of over 500 tons of newsprint pulp every twenty-four hours. They more than replace the 31 pocket grinders formerly used. Shown at the top is the loading side where the wood is floated directly to the grinding chamber. One operator can easily keep two units loaded so only one third of the men that were required are needed now.

If you manufacture groundwood pulp you will want to know more about the production record of the Roberts Grinder.

Write us for full information.

THE APPLETON MACHINE COMPANY
APPLETON • WISCONSIN
Eastern Sales Representatives, CASTLE & OVERTON, Inc., 630 Fifth Avenue, New York

Names Gumming Industry Committee

Nine representative business men in the gumming industry, manufacturers of all types of paper and cloth materials gummed and sold in sheets or rolls, have been appointed as members of a Gumming Industry Advisory Committee, the Office of Price Administration at Washington announced last week.

These manufacturers, who represent all sections of the country where gummed products are made, as well as both large and small companies, will provide a working relationship between OPA and the industry for the consideration of problems arising from price controls in the gumming industry.

The committee will be asked to furnish, analyze and discuss information pertinent to the price control program, and to advise and make recommendations to OPA on matters which their experience indicates will aid the program.

Products of the industry are governed by Maximum Price Regulation No. 129—Certain Converted Paper Products — and Maximum Price Regulation No. 459—Gummed Kraft Sealing Tape.

First meeting of the committee will be held on May 16, 1944, in the regional OPA office in Chicago, 226 West Jackson Boulevard. A chairman will be selected at that meeting, which will be of an organizational nature.

The committee follows: R. A. Maish, director, Dennison Manufacturing Company, Framingham, Mass.; T. H. Mittendorf, general manager, The Gummed Products Company, Troy, Ohio; A. S. Hammond, manager, Western Waxed Paper Company, North Portland, Ore.; J. A. Shartle, president, Brown-Bridge Mills, Inc., Troy, Ohio; W. R. Lusignea, vice-president, Paper Manufacturers Company, Inc., Philadelphia, Pa.; B. G. Bundy, sales manager, Nashua Gummed and Coated Paper Company, Nashua, N. H., W. K. Gerbrick, president, Central Paper Company, Menasha, Wis.; Nathan Warshaw, president, Atlantic Gummed Paper Corporation, Brooklyn, N. Y., and George Goodsir, vice-president, Mid-States Gummed Paper Company, Chicago, Ill.

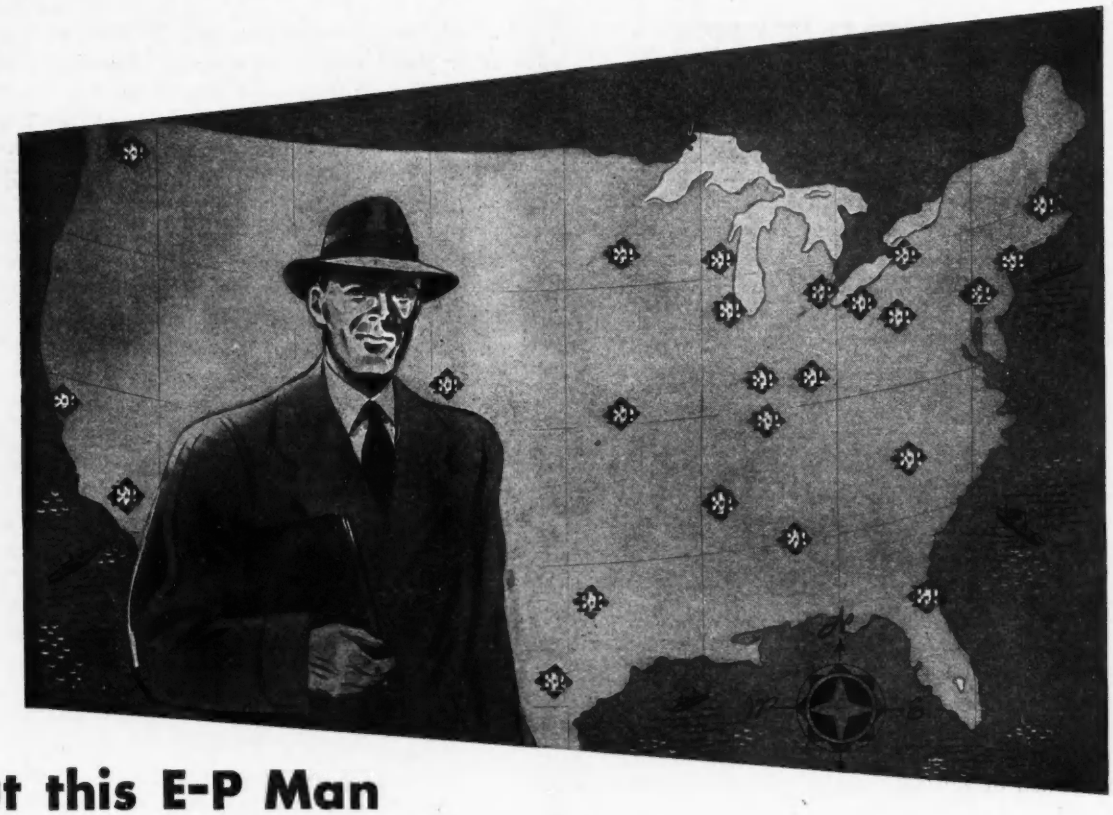
Packaging Committee Named

A Packaging Committee, to serve as a War Production Board clearing house for all problems pertaining to containers and wrappings, has been announced by Harold J. Boeschenstein, acting director of the Forest Products Bureau of the War Production Board.

Faustin J. Solon has been named chairman of the Packaging Committee. Mr. Solon, on loan from the Owens-Illinois Glass Company of which he is vice-president and director of sales, will also serve as a special assistant to the director of the WPB Containers Division and the director of the Forest Products Bureau.

So that wartime packaging can be considered in its broadest aspects, the Committee will include officials from the Containers Division, Paper Division and Paperboard Division. As Claimant Agencies, the Army, Navy, War Foods Administration and Office of Civilian Requirements will also be represented. Industry Advisory Committees will frequently be consulted by the newly appointed committee.

The Packaging Committee will recommend policies, initiate programs and act as coordinating agent for all packaging problems of production, use and conservation.



Put this E-P Man on Your Planning Board... as Paper Transportation Advisor

You know him, of course—your local Elwell-Parker Field Engineer. As your Mill-expansion plans take definite form, it will pay you to know him *better.*

For he is a trained, qualified consultant on low-cost Load Transportation in Pulp and Paper Mills—the vital concern today of your Engineering, Production and Sales Executives alike. The E-P Man can help you to organize Material-Handling Systems to move your loads without waste—in *volume*—with *speed*—with *safety.*

Your local E-P Man is supported by Elwell-Parker's vast experience covering over 35 years. Elwell-Parker Power Industrial Trucks and Cranes, handling every kind of Paper Mill load, have effected huge savings for companies throughout the Industry. All of the experience gained is available through your Elwell-Parker Field Engineer.

Appoint him your Paper Transportation Advisor. Take him into your confidence as you make vital decisions for your future. He is as close to you as your telephone.

The Elwell-Parker Electric Company, 4500 St. Clair Avenue, Cleveland 14, Ohio.

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Boston ..... COM 5522	Ft. Worth 4-6184	Milwaukee ..... MA 7817	St. Louis ..... LA 4545
Buffalo ..... GR 7664	Greenville 534	Minneapolis ..... GE 3247	San Antonio ..... TR 3653
Charlotte 5026	Indianapolis ..... LI 3131	Montreal ..... HA 7191	San Francisco ..... GA 1827
Chicago ..... SUP 7420	Jacksonville 5-1384	New York ..... COR 7-0797	Seattle ..... EL 6722
Cincinnati ..... MA 0650	Kansas City ..... VA 7021	New Orleans ..... MA 6316-C	Syracuse 2-9596
Cleveland ..... MA 8915			Toronto ..... WA 1478
Columbus ..... AD 4824			

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

CHICAGO PROFESSIONAL PAPER GROUP—First Monday of each month except July and August at Chicago, Ill.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION—25th Anniversary Convention, Edgewater Beach Hotel, Chicago, Ill., May 24, 25 and 26.

WASTE PAPER

Waste paper has become an essential war material through the increasing need of more paper board in which to pack and ship food and many kinds of war supplies overseas. The recommended production of paper board for the second quarter of 1944 aggregates 769,000 tons, an increase of about 9% over the output in the first quarter, the previous high production figure, and substantially higher than the production of 716,000 tons in 1943, of 664,000 tons in 1942 and with 700,000 tons in 1941, in the like period. The current need for waste paper by paper and board mills is as urgent as it has been for many months. The War Production board terms the supply situation as very critical. The short supply is indicated in the inventory position which declined 50% in February of this year below the like month last year. Collections for the first two months of this year averaged about 537,000 tons, compared to an estimated requirement of 660,000 tons monthly, to meet the 8,000,000 ton goal set for this year.

More waste paper can be collected if every individual and concern will cooperate. According to the recent Gallup toll, the WPB points out, nearly 9,000,000 or 25% of the nation's households were uninformed about the Victory Waste Paper Campaign now in progress. It is gratifying to note that industry is doing a waste paper salvaging job about equal to what householders are accomplishing, the WPB stated in its report of April 20. That agency estimated that of all the waste paper salvaged in this country, excluding Government agencies, about 50% is turned in by manufacturing concerns, business houses, stores and other commercial organizations. Total waste paper receipts at the mills last year totaled 6,060,000 tons and to meet this year's goal 2,940,000 additional tons are needed.

In commenting on the excellent response of business concerns to collect more waste paper, Herbert M. Faust, director of the WPB Salvage Division, said last week: "Industry salvaged 2,750,000 tons of waste paper in 1943. The paper was obtained from a wide variety of sources, ranging from printing and other plants whose raw material is paper, to collections of newspapers and magazines from trains at the end of their runs. The program is directed by the Industrial Salvage Branch, whose field force contacts thousands of plants throughout the country. In addition, about 8,000 leading industrialists and business men in 800 industrial communities are reaching 75,000 of the larger plants, with many offices and other establishments as additional participants in the effort."

The industrial waste paper salvage work is conducted in the communities through volunteer committees, Mr. Faust then went on to explain. These groups have in their membership a representative of each main type of local industry and business, who is responsible for enlisting the support of all business concerns in his line. The individual plants appoint a plant salvage manager, who works with superintendents, foremen, office managers and others. "Like housewives and other folks, our business organizations have had to be educated to salvage waste paper," said the Salvage Division director. "However, once convinced of the urgent need, and in a sense prompted by the spectre of curtailment in their own supply, American industry is doing a magnificent job of salvaging waste paper." Some plants are conducting contests among employees, Mr. Faust said. An Eastern business-firm producer, for example, Mr. Faust said, offered a prize of a $25 War Bond to the person bringing the most paper from his home during one month, plus a second and third prize, in addition to a cash payment for the total each person salvaged.

In a report to the War Production Board this concern wrote: "In the normal operation of our business we accumulate a sizeable tonnage of waste paper, which is baled and sold each month, but we wish to bring to your attention that the amount reported includes a total of 42,730 pounds of waste paper contributed by our employees." A manufacturer reported: "Seven or eight months ago when we received word of the necessity of paper salvage we went through our files and turned in about 20,000 pounds of waste paper. We have just had a meeting at which it was decided to go through our files again, and obtained around 6,000 pounds of additional waste paper." An industrial concern in the Chicago area wrote the WPB: "Our company did not wait for your suggestion to scrap our old office records, since we do this to a certain extent every year. However, this year we took it more seriously and scrapped all of our records from 1910 to 1930. Maybe we should have continued on to 1935, but that is a matter of opinion."

Current reports indicate that waste paper collections show a definite increase. Collections during March were approximately 57,000 tons higher than in the previous month. The trend of collections is upward. The goal is admittedly high but there is

such a very large amount of paper stock not now being salvaged, that with good cooperation on the part of everyone, there can be scarcely any question that the total of 8,000,000 tons of paper stock can be salvaged this year. The Government agencies, the newspapers and the trade press are giving excellent cooperation through publicity to impress upon all the public the urgent need of paper stock of all kinds to stretch out the wood pulp supply to meet the increasing wartime requirements of the nation.

Corn Helps Fight the War

Many millions of bushels of corn, grown in our own corn belt, are milled annually to go into the production of war necessities. This is one of several little-known facts about corn that are brought out in a booklet, "Corn Facts and Figures," just published by the Corn Industries Research Foundation.

Such major industries as textiles, paper and paper products, metals, adhesives, fibreboard containers, and drugs and pharmaceuticals require more than thirty million bushels of corn a year in their operations, it is stated. A list is given of 500-odd uses of such products as corn starch, corn syrup, corn sugar, corn oil, etc., for industrial, food and livestock purposes.

Regarding the direct war uses of products of corn, it is pointed out that in metal castings for airplane and truck engines for example, dextrin is used extensively as a core binder, and that the non-leaking rubber-covered gas tank of airplanes is molded in a form strengthened with dextrin. Also, "the world's best-dressed, and best-equipped soldier, the American doughboy, requires 120 pounds of cotton fabrics per man per year.

The current serious shortage of corn gives particular significance to the statement that "a critical shortage of milled-corn products would adversely affect the country's military effort since the war program would be subjected to serious dislocations."

The purpose of the publication, according to the Corn Industries Research Foundation, is to give an over-all picture of the importance of corn to American agriculture, marketing agencies, industries, and the war effort.

To Be Western Sales Manager

The Calco Chemical Division of the American Cyanamid Company has named Sam Klein the organization's Western sales manager. Mr. Klein's appointment is effective May 1, at which date he will establish his offices in Chicago.

Employed in the dyestuff industry since 1907, Mr. Klein was with A. Klipstein & Co., and Read Holliday & Sons before joining Calco in February of 1917. For the past 20 years he has been in charge of Calco's Lake Department.

Mr. Klein was extremely active in the Community Chest and local civic organizations of Plainfield, N. J., where he resided from 1920 until 1938, at which time he removed to 500 West End avenue, New York City.

Mr. Klein has two sons, both of whom are in the armed forces. One is a member of the 8th Army Air Force and has been in England for two years. The other is serving in the Quartermaster Corps of the Navy.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
March 25	90.3	March 27	90.6
April 1	88.0	April 3	88.6
April 8	88.2	April 10	89.9
April 15	86.7	April 17	89.3
April 22	91.3	April 24	89.7
April 29	*90.9*	May 1	85.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3
1944	89.6	89.6	90.1	*89.5*			

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Avg.
1944	91.0	88.3	89.6	89.6	82.0	87.8

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	89.6	67.5	80.2	85.3	90.9	102.7	88.6	*90.0*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	*96*									

Week ending Mar. 25, 1944—97
Weew ending Apr. 1, 1944—93
Week ending Apr. 8, 1944—94
Week ending Apr. 15, 1944—92
Week ending Apr. 22, 1944—98
Week ending Apr. 29, 1944—*98*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Makes Awards for Suggestions

Hudson Falls, N. Y., May 8, 1944—At a meeting of the Sandy Hill Club of the Sandy Hill Iron and Brass Works on April 26, awards to employees totaling $270 for suggestions were announced.

Twenty employees received the awards. Ideas they had submitted have been tried out during the past month. These awards are made on the basis of saving in cost of operation, increase in production, quality, or the safety of employees. Employees who participated are eligible for membership in the Sandy Hill Club, which now has 106 members. Following are the employees who received awards: George Efnor, Ernest DeGrechie, Arthur R. Stewart, Edward Fitzgerald, Charles Tisinger, Daniel L. Dunn, George E. Clink, Louis Jordan, David Rowe, Fred Terrio, Frank Smith, Edouardo DiBiase, Bernard Gaulin, Jerry Brockelsby, Robert Twiss, Ional Petteys, Fred Gaulin, Theodore Krebs, George Freeman, and Luigi Distasio.

The club also held a monthly dinner at the Queensbury Hotel, Glens Falls, earlier in April where a number of social events were enjoyed. A speaker discussed steel, and motion pictures were shown.

Cleveland Container Builds Spur Track

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., May 8, 1944—The Cleveland Container Company has requested permission of the common council to construct a spur line connecting the Rutland Railroad with the plant here. Plans for the project have already been made and officials estimate that an expenditure of $30,000 will be involved. It was announced that the proposed spur would be approximately three-eighths of a mile long and will be near the site of the present viaduct near Ford street. Construction of the spur will provide the two local plants of the company with railroad facilities at their doors.

Check List OF MONSANTO PLASTICIZERS

. . . to help you make the most efficient use of available supplies!

With supplies of plasticizers short of wartime needs it is essential that the most efficient possible use be made of every available pound.

That's why it is suggested that you review the Monsanto plasticizers you are now using to make certain they are the best possible materials available for your needs.

A quick glance at this table of the principal Monsanto Plasticizers will give you a preliminary check. A letter will bring you the help of a Monsanto technical service representative in making a final decision. Write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, St. Louis, Missouri.

CHARACTERISTICS OF MONSANTO PLASTICIZERS

	Mol. Wt.	Color and Form	Boiling Point	Cryst. or Melt. Point	Sp. G.	Lbs. per Gal.	Refrac. Index	Evap. Rate Gms./sq.cm/hr/ 100°C	Solubility in Water	Retentivity in N/C	Retentivity in Ac/C	Light Fastness in N/C	Light Fastness in Ac/C	USES
Tricresyl Phosphate	368	Colorless liquid	295°C/13 mm	Non-cryst., solid at −35°C	1.165/20°C	9.7	1.556/20°C	0.00000708	Less than 0.002% at 85°C	100 plus	0	Poor	—	Excellent compatibility with most resins and plastics except cellulose acetate; imparts excellent flexibility with a minimum decrease in tensile strength; excellent fire retarding properties.
Triphenyl Phosphate	326	White flakes	245°C/11 mm	48.5°C	1.268/60°C	10.5	———	0.00000028	0.001% at 34°C 0.002% at 54°C	100	80	Poor	Fair	Standard fire retarding plasticizer especially for cellulose acetate; gives clear tough compositions of good flexibility without tackiness.
Santicizer 8	199	Light amber liquid	———	———	1.188/25°C	9.9	———	0.0002659	0.13% at 23°C 0.213% at 48°C	100	90	Poor	Good	Excellent plasticizer for cellulose acetate, giving brilliance and polish; valuable plasticizer for coating designed to withstand petroleum products; increases flexibility of shellac and protein plastics.
Santicizer 9	171	White granules	———	105°C	1.313/25°C	10.9	———	0.000053 at 65°C	1% at 34°C	25–30	25–30	Poor	—	Imparts gloss; gives smooth working and uniform curing of molded phenolic and urea resins; blends readily with most synthetic resins; does not impart softening action of liquid plasticizers.
Santicizer B-16	336	Colorless liquid	219°C/5 mm	Below −35°C	1.097/25°C	9.15	1.490/25°C	0.0000881	0.0012% at 30°C	100	20–30	Excellent	Excellent	With nitrocellulose, gives clear, brilliant films that are flexible, tough, moisture resistant and have good weathering qualities; solvent for and imparts plasticity to most synthetic resins. Non-toxic.
Santicizer E-15	280	Colorless liquid	190°C/5 mm	20°C	1.180/25°C	9.84	1.498/25°C	0.0001106	0.0175% at 30°C	100	100	Excellent	Excellent	With both acetyl and nitrocellulose, it gives clear, tough flexible films that have much increased resistance to moisture penetration. Non-toxic.
Santicizer M-17	266	Colorless liquid	189°C/5 mm	Below −35°C	1.220/25°C	10.2	1.504/25°C	0.000221	0.09% at 30°C	100	100	Excellent	Excellent.	Imparts high degree of permanent plasticity; excellent gasoline resistance. Non-toxic.
Dibutyl Phthalate	278	Colorless liquid	206°C/20 mm	−35°C	1.047/20°C	8.75	1.490/25°C	0.000221	0.001% at 30°C	100	Less than 20	Excellent	—	A standard lacquer plasticizer giving high degree of plasticity; excellent light stability and good weathering qualities.
Diethyl Phthalate	222	Colorless liquid	295°C	−0.3°C	1.123/20°C	9.35	1.503/20°C	0.000617	0.058% at 30°C	100	100	Excellent	Excellent	Generally used in mixture with Dimethyl Phthalate as a plasticizer for cellulose acetate.
Dimethyl Phthalate	194	Colorless liquid	282°C	0°C	1.196/15.6°C	10.0	1.515/20°C	0.001925	0.4% at 32°C 0.6% at 63°C	100	100	Excellent	Excellent	Standard cellulose acetate plasticizer generally used in mixtures with diethyl phthalate or other plasticizers.
Diphenyl Phthalate	318	White powder	———	69°C	1.28/25°C	10.68	1.572/74°C	———	Insol.	65	20	Poor	—	Compatible with nitrocellulose and with the sulfonamide, phenolic, polystyrene and vinyl types of resins; gives increased water resistance to all compositions in which it is used.

Tricresyl Phosphate and Triphenyl Phosphate have excellent Fire Retardation.

MONSANTO CHEMICALS

SERVING INDUSTRY...WHICH SERVES MANKIND

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Bursting Strength of Paper

Revision of TAPPI Standard T 403m-41

Bursting strength is defined for this method as the hydrostatic pressure required to produce rupture of a circular area of the material under test 1.20 inches in diameter, when applied at a controlled, increasing rate, as described under Procedure. During the test the specimen must be free to bulge under the influence of the increasing pressure, but the periphery of the test area must be rigidly fixed so that it does not move while the pressure is being applied.

Scope

The method is designed to measure the bursting strength of paper and paper products having a bursting strength of not over 200 points and in the form of single or laminated flat sheets not over 0.025 inch thick. The method is not intended for use for testing corrugated box board.

Apparatus

The instrument shall have:

1. Means for firmly clamping the test specimen without slippage during the test, between two annular, plane, unpolished (matte) surfaces, which may have fine, concentric tool marks not over 0.002 inch deep, for this purpose. The upper clamping surface (the clamping ring) shall have a circular opening 1.200 ± 0.001 inches in diameter. The circular edge of the opening which is in contact with the paper during testing shall be merely relieved of sharpness, but not rounded off enough to alter significantly the diameter of the opening. The lower clamping surface (the diaphragm plate) shall be 0.125 inch thick and shall have an opening 1.25 ± 0.01 (1.24 recommended) inches in diameter, with the edge which in use is in contact with the rubber diaphragm rounded off sufficiently to prevent it cutting the rubber when pressure is applied. The clamping ring shall be connected to the clamping mechanism through a swivel joint to insure an even clamping pressure. During tests the circular edges of the openings in the two clamping plates shall be substantially concentric, with no overlapping at any point.

2. A rubber diaphragm, of pure gum rubber, free from mineral loading material and 0.033 to 0.035 inch thick, clamped between the lower clamping plate and the rest of the apparatus, so that before the diaphragm is stretched by pressure underneath it, the center of its upper surface is below the plane of the clamping surface. A pressure of 0.5 pound per square inch should be capable of distending the diaphragm to a height of at least ⅛ inch above the clamping plane. It is recommended that this diaphragm be renewed at least once a month.

3. Means of applying controlled, increasing hydraulic pressure to the underside of the diaphragm until the specimen bursts. This pressure shall be generated by a motor-driven piston forcing a liquid (usually glycerine) into the pressure chamber of the apparatus at the rate of 75 ml. (about 6 cubic inches) per minute. (*See* Note 1)

4. A maximum-reading pressure gage (*See* Note 3), with a dial preferably 5 or more inches in diameter, graduated to indicate bursting pressures, expressed in pounds per square inch, with the following accuracy:

Pressures	*Accuracy*
10 or less	0.25
11 to 45 inclusive	0.5
46 to 100 inclusive	1.0
101 to 200 inclusive	2.0

Calibration of Gage

The gage shall be calibrated, while inclined at the same angle at which it is used during tests, by means of a deadweight gage tester of the piston type, or by means of a column of mercury. During calibration the pressure shall be applied so that the travel of the needle of the gage simulates its action during the actual testing of paper. (*See* Note 2.) Gages in frequent use should be calibrated at not less than monthly intervals. If a gage is accidentally used "over capacity," it should be recalibrated before it is used again.

Test Specimen

The test specimens shall be at least 2.5 by 2.5 inches, and shall be representative of a sample obtained according to TAPPI Standard T 400 m. They shall be conditioned for testing according to TAPPI Standard T 402 m.

Procedure

The test shall be made in an atmosphere conditioned according to TAPPI Standard T 402 m.

Clamp the specimen securely in position, apply the hydrostatic pressure as specified in item 3 under Apparatus until the specimen ruptures, and record the maximum registered by the pressure gage. Watch carefully for movement of the unclamped margin of the specimen. If slippage is indicated, discard the

NOTE: TAPPI Standards may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd St., New York 17, N. Y., at 25 cents each.

test value and increase the clamping pressure for the following tests. Make at least 10 tests, using as many of the sheets comprising the test specimen as possible, and applying an equal number to the felt side and to the wire side.

Make no tests on areas containing watermarks, creases, imperfections, or visible damage. After each test return the indicator needle of the gage *gently* back to zero.

Report

The test results, corrected for any gage error, shall be reported in points (approximately pounds per square inch) to three significant figures, as maximum, minimum, and average bursting strength. Report also the range of the scale of the pressure gage used, and the number of tests made.

Reproducibility of Results

Results of tests made on different samples from the same shipment, or on different instruments, are expected to agree within 5%, except possibly for tissues and other weak papers with a bursting strength of 5 points or less.

Notes

1. The specified rate of pressure application is attained in hand-driven instruments by turning the hand wheel 120 revolutions per minute. Since the testing rate of both types of instruments may be changed by air trapped in them, care should be exercised to exclude air when diaphragms or gages are changed.
2. The rate of applying the pressure in calibration can be regulated by means of the valve on the dead-weight tester. The regulation is facilitated by providing the valve with a lever and stop.
3. The gage used for measuring the bursting pressure should be such that the individual readings will be not less than 25% or more than 75% of the total capacity of the gage. Therefore, unless the approximate strength of the paper under test is known, preliminary tests should be made to determine the required capacity of the gage.

References

1. Carson, F. T., and Worthington, F. V., "A Critical Study of the Bursting Strength Test for Paper," *Bur. Standards J. Research* 6:339, *Research Paper* RP278 (1931).
2. Carson, F. T., "Some Notes on the Revision of Methods for Measuring the Strength of Paper," *Paper Trade J.* 102, TS253 (1936).
3. Clark, James d'A., "Determining the Bursting Strength of Paper," *Technical Assoc. Papers* 4:367-370 (1932).
4. Oliver, C. V., "Variability in Results Met with in Paper Strength Testing," *Proc. Tech. Sect. P.M.A.* 11, Part 1:53 (1930).
5. Underhay, C. F., "Bursting Tester Standardization," *Proc. Tech. Sect. P.M.A.* 11, Part 2:247 (1931).

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

William C. Dearing, research chemist, Plaskon Division, Libbey-Owens-Ford Glass Company, Toledo, Ohio, a 1934 graduate of Western Reserve University.

Merle L. Dorman, assistant personnel, California-Oregon Paper Mills, Division of Columbia River Paper Mills, 2001 East 57th street, Los Angeles, Cal., a 1940 graduate of Iowa State College.

Godfrey W. Dyne, vice-president, American British Chemical Supplies, Inc., 180 Madison avenue, New York, N. Y., a 1911 graduate of London University.

Henry W. Fales, mill manager, Marinette Paper Company, Glens Falls, N. Y., a 1935 graduate of the University of Maine.

Julius Grant, chief general manager, New Bury Paper Mills, Ltd., and Rishton Paper Mills, Ltd., Gigg, Bury, Lancashire, England, a 1923 graduate of the University of London.

Reynolds Guyer, director of research, Waldorf Paper Products Company., St. Paul, Minn.

Garrison Householder, technical director, the Plastic Coating Corporation, Holyoke, Mass., a 1928 graduate of the University of Vermont.

Ernest M. Loveland, general manager, National Southern Products Corporation, Tuscaloosa, Ala.

Stanley F. Marr, mechanical superintendent, Hollingsworth & Vose Company, 112 Washington street, East Walpole, Mass.

Albert L. Mayer, paper technician, Hercules Powder Company, Wilmington, Del.

Wilberforce M. McAllister, assistant chemist, British Columbia Pulp and Paper Company, Ltd., Woodfibre, B. C., Canada.

P. F. Neumann, service engineer, Hercules Powder Company, Paper Makers Chemical Department, Kalamazoo, Mich., a 1933 graduate of Michigan State College.

Carlaw P. Olstad, assistant superintendent, Canada Foils, Ltd., 7 Fraser avenue, Toronto, Ont., Canada, a 1933 graduate of the University of Toronto.

Samuel T. Orton, Jr., vice-president and general manager of the Union Machine Company and the Union Screen Plate Company, Fitchburg, Mass., a 1935 graduate of Harvard University.

Howard A. Simons, consulting engineer, Blocdel Stewart & Welch, Ltd., Vancouver, B. C., Canada, a 1921 graduate of the Massachusetts Institute of Technology.

Gilbert Stevens, technical assistant to the president, Minnesota and Ontario Paper Company, 500 Baker Arcade Building, Minneapolis, Minn., a graduate of the University of Michigan.

Frank C. Vaughan, assistant manager, Hummel-Ross Fibre Corporation, Hopewell, Va., a 1932 graduate of the Virginia Military Institute.

Jack M. Wheaton, research chemist, Owens-Illinois Glass Company, Toledo, Ohio, a 1930 graduate of Toledo University.

Stephen V. Worthen, research chemist, S. D. Warren Company, Cumberland Mills, Maine, a 1936 graduate of Dartmouth College.

Book on Dehydration

E. W. Williams Publications, Inc., have issued a valuable book entitled Dehydration, Its Postwar Future by Laurence K. Harper, president of the National Dehydrators Association (146 pages illustrated 6 x 9). It is of interest to many manufacturers of packaging papers since it contains an authoritative view of the trends in this new industry. It contains a list of the members of the National Dehydrators Association, the geographic distribution of food dehydrators and an excellent bibliography on the subject. It is not a technical book. The author, who is also president of Sardik Food Products Corp., has had a large number of years of experience in practical production and selling experience. Advertising agencies and merchandising men will find this book of help in providing a key to future advertising opportunities. The industry as it stands today has had a brief past, a volatile present and a hopeful future. Every form and style of package from the cellophane envelope containing 3 oz. to 30 gal. steel drums fitted with rubber gaskets and seal tight tops are now being used. Paper companies, container manufacturers and chemical companies have joined together in many instances to work out new types of packaging material. Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York 17, N. Y., at $2.80 per copy.

Diatomaceous Pigment in White Patent Coated Solid Manila Board*

By William R. Monette[1]

Abstract

The results obtained by use of diatomaceous silica in white patent coated solid manila board and the effect on the physical properties of the board are given. The figures presented were compiled from mill laboratory data kept on plant production runs and illustrate advantages gained by comparative data on runs with and without diatomaceous silica.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Engineer, Dicalite Co., New York, N. Y.

The diatomaceous pigments used in paper are finely divided, very light and bulky, amorphous in character and their use has shown a notable gain in the last two years: war conditions are only partly responsible, merely serving to hasten the development.

The results reported in this paper were secured by the use of diatomaceous pigments in both the liner and the filler of white patent coated solid manila board manufactured on a cylinder machine. While similar applications of diatomaceous pigment are being made in other mills, the results secured in one plant are here presented because carefully kept records are available covering a long period. These data were compiled from the mill's own laboratory records, kept on regular production runs, and give a clear and accurate picture of results secured. Cooperation of superintendents and machine operators have given an unusual opportunity for observation.

The original purpose of the work was to improve the quality of certain products and to overcome operating difficulties with which many mills are familiar in their constant effort to make a better board from a given type of stock.

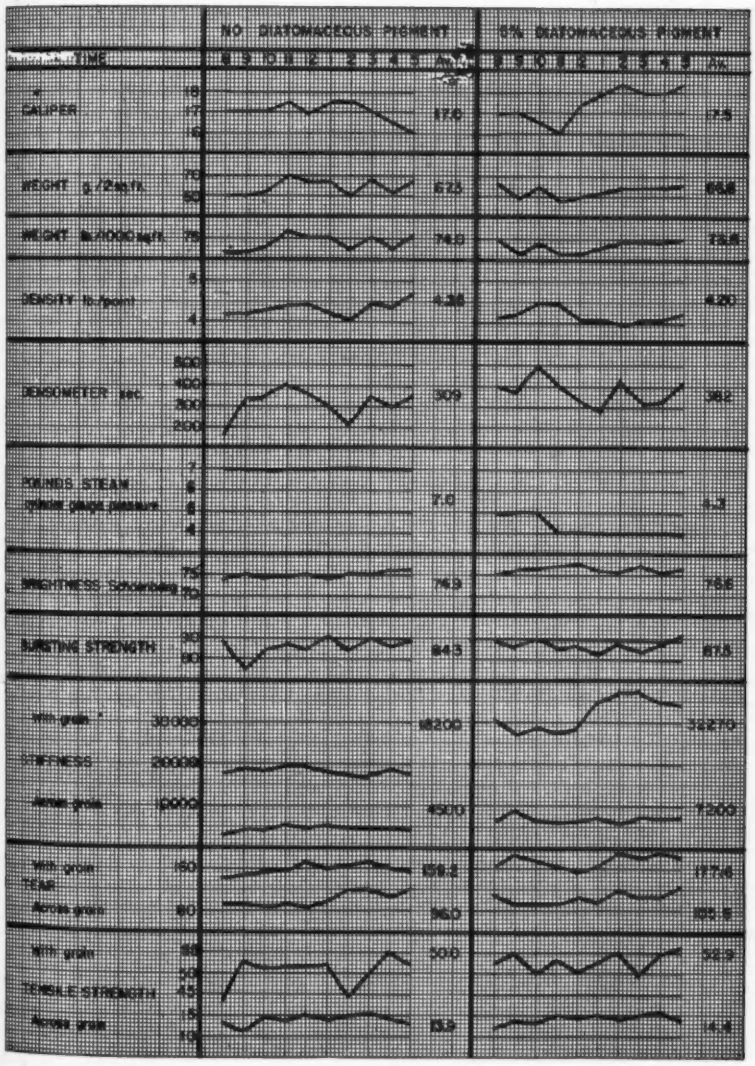

FIG. 1

Effect of Diatomaceous Pigment on White Patent Coated Solid Manila Board (Machine Speed 150 Feet per Minute)

Mill Furnish

In order to compare results with and without the use of the diatomaceous pigments, records were kept on runs under both conditions. Also the furnish of both the liner and the filler stock was kept the same as nearly as possible. The liner furnish was made up of both long and short fiber stock; bleached sulphite pulp and a small percentage of hard whites. This liner stock was highly jordaned and considerably hydrated having a Schopper Riegler degree of beating of from 35 to 38. The filler furnish was made up of groundwood and unbleached pulp having a Schopper Riegler degree of beating of from 34 to 38. These ranges of degree of beating are constantly maintained in manufacturing this board.

The diatomaceous pigment in the proportion of approximately 5% on the weight of the pulp, was added to the beaters. Results were apparent from the beginning being noted and commented upon, particularly by the machine tenders.

Much of the data presented in Fig. 1 is self-explanatory and the benefits will be evident to paper production men generally.

Results obtained during the test production runs have been charted in graph form and are shown in Fig. 1. The data are given covering an average 9-hour period from 8:00 a.m. to 5:00 p.m. on caliper, weight (both in grams per 2 square feet and in pounds per 1000 square feet), density (pounds per point), densometer (seconds), pounds of steam (cylinder gauge pressure), brightness (Schoenberg meter), bursting strength, stiffness (with grain and across grain), tear (across grain and with grain), tensile strength (with grain and across grain). The first column, that is, the left-hand column gives test data regarding the sheet without diatomaceous pigment. The data in the second column pertain to the sheets containing 5% diatomaceous pigment in both the liner and the filler. The tests from which these data were compiled (except for brightness) were made according to TAPPI standard methods.

The most important need was for greater bulk since to obtain the desired caliper, the use of additional pulp produced a board of heavier weight per thousand square feet than specified.

Another important problem was the frequent tendency of the stock to form high and low spots as the sheet was being formed. The high spots were excessive piles of fibers and were pressed too tightly without being dried sufficiently after passing through the driers. The low spots were loosely formed which after passing the driers were too thin and overdried. This condition tended to cause dark streaks on the surface of the board which also remained uneven in moisture content after passing the driers.

Mill Results

Officials at this mill state definitely that the one advantage of increased bulk well justified the use of the diatomaceous pigment. It can be noted (Fig. 1) that while caliper increased from 0.017 to 0.0175 the weight in pounds per 1000 square feet decreased from 74.0 to 73.5. Density, listed as pounds per point, dropped from 4.35 to 4.20. These figures are the averages for the 9-hour period covered. The three figures taken in conjunction, show a bulking effect of approximately 3.5% caused by the addition of the diatomaceous pigment. Besides enabling the mill to secure desired caliper without increasing weight specifications, this bulking effect has meant a saving in expensive paper fibers which is particularly important today in view of war time restrictions.

Improved sheet formation is a quality which cannot be expressed in test figures but can be observed by the expert eye. However it can be substantiated by tests for density, bursting strength, stiffness, tear, etc. The addition of diatomaceous pigment to the furnish has solved the formation difficulties in this plant which were formerly evident in their finished sheets. As previously explained, the sheet was prone to be affected by high and low spots that calendered unevenly. Addition of the diatomaceous pigment tended to level out the sheet giving a smooth finish with an equal distribution of moisture across the entire width. This was definitely attributed to better and more even formation at the wet end.

It was observed that the diatomaceous pigment added to the furnish dispersed the fibers far more evenly than they ordinarily dispersed by themselves in the wet end during formation. Improved dispersion naturally allows the fibers to build up more uniformly on the cylinders, giving a more even sheet entering the driers. Better formation, easier drying, and improved finish are the results. The latter advantage is a substantial one, according to the mill's officials, showing up in better printability in converting operations. The surface accepts ink more readily and uniformly without the necessity of "flooding" solid areas of printing plates.

Referring to Fig. 1, it will be noted that whereas a steam pressure of 7 pounds was required to dry the sheets containing no diatomaceous pigment, the sheet containing 5% of this material required only an average of 4.3 pounds of steam pressure for drying. Such drop in steam pressure is regularly noted in this mill when diatomaceous pigments are used, in fact, the drop here recorded is less than average. In the majority of regular runs on this type of stock, the steam pressure drop has averaged more than 50%

Aside from its indication of better formation, this effect of the use of diatomaceous pigments has an operational advantage. One mill might choose to run a greater tonnage or more board feet per minute at the same steam pressure required without diatomaceous pigment. Another mill might prefer to run the same tonnage or feet of board at the lower steam pressure. In the case of the particular mill under discussion, the greater advantage lay in running the same amount of board as previously at the lower steam pressure.

Experience has proved to officials of this mill that any stock which is difficult to dry can be dried much easier with the addition of approximately 5% diatomaceous pigment to the furnish. Superintendents and machine operators generally will realize the advantage of this point, for almost every board mill will at one time or another have types of stock that are hard to dry and difficult to form.

Text on Statistics

Statistical Adjustment of Data by W. Edwards Deming of the U. S. Bureau of the Census and Bureau of the Budget has been published by John Wiley & Sons, Inc. (261 pages). Insofar as the paper industry is concerned this book would be of value primarily to research men who need to interpret the results of large numbers of tests. Although there is considerable use of calculus it is not entirely necessary to be an expert in this branch of mathematics to understand the text. Considerable attention is given to the mathematical treatment of data to fit curves. Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y. at $3.50 per copy.

R. C. Spencer Goes With Lowe Paper Co.

The Lowe Paper Company, paperboard manufacturer, Ridgefield, N. J., announces the appointment of Robert C. Spencer as assistant sales manager.

For the past year, Mr. Spencer has been with the War Production Board at Washington serving first, in the War Products Development Section of the Pulp and Paper Division and later, as Chief of the Boxboard Section of the Paperboard Division.

In the newly created position, he will be concerned with the mill's sales plans and post-war activities and will report to Malcolm B. Lowe, vice-president in charge of sales. W.P.B. is retaining Mr. Spencer as a consultant to the Paperboard Division.

Controlled Hydraulics on Flat Screens For Improved Pulp Production and Quality*

By H. F. Schenk[1]

Abstract

This paper analyzes the natural flow forces at work in a liquid flowing to and fro through a screen plate which is composed of many adjoining orifices.

It is the contention of the author that the screen slots are most efficient when they are properly separated since if the slots are too close, the many radial flow forces generated set up too many forces opposed to the more dominant natural gravity forces.

The effect of the water blow-back and air blow-back when the forces dominating the radial flow forces and the gravity forces are reversed by the up-stroke of the diaphram is also considered.

By correct patterning the slot size and spacing can be so adjusted to better control the hydraulic forces and will result in increased capacity per unit with less water required for the screening process.

It is agreed that if the slotted areas of screen plates are open and stay open, good capacities of clean pulp are obtained, but if the slotted areas are constantly plugging there is a constantly diminishing fiber quantity and quality. Strains on plates, plate holders, diaphragms, and drives are increased and men must be constantly at work with high pressure steam and water hoses in an effort to keep the slots open.

The question of what to do about it is still prevalent although nature has given water a number of hydraulic habits as old as time itself. The main troubles can be traced to the fact that the study of these properties has been neglected and water has been taken for granted.

It will be found that the hydraulic properties of water are at work, providing the influencing factors in the field of flow separation, both over and under the slotted area of a screen plate. When the scope of each of these factors is found and the dimensions of their forces determined, they then can be combined to give far more flexible and greater control of the equipment for handling the fiber variables met in making any particular kind of pulp.

To consistently maintain an uninterrupted flow of water and fiber through the slotted area in a velocity or flow field, a study must be made to determine the correct relationship between the length and rate of pulsating strokes, number and width of the bars between the slots, size of the slots, the weight and velocity in the hydraulic gradient over a given slotted area. These mechanical relationships of the screen and plates can be combined with the influencing hydraulic properties on bodies of fiber in suspension in water. When both are properly combined, the flexible controlling factors required to do the kind of a screening job desired but not always attained are possessed.

There are several points upon which there must be an agreement:

1. Water particles are molecular in size.
2. The raw fiber to be suspended in water particles has length, breadth, and thickness—in short, visible measurable mass.
3. The dimensions of raw fiber cover the field of mathematical imagination with its range of specific gravities and measurements.
4. The water particles have a fixed or very limited range of specific gravities.
5. One fiber particle in suspension in water is surrounded by countless water particles; that immersed and floating fibers bodies are met by the resisting forces within the liquid.
6. All these water particles are controlled by the natural laws governing their actions in mass movements.
7. No fiber can move as fast in a body of water particles as the mass motion of the body of water particles surrounding it.

Because the myriads of water particles move faster than the fibers down a gradient, the active governing forces of the water particles predominate very forcibly over the less active and fewer numbers of fibers in a screenable consistency.

Natural Hydraulic Forces

There are a number of known forces and their fields of influence are found in the pattern of relative motion between a fluid and the confining boundary side walls of a screen vat, the floor of which is composed of slotted screen plates over and through which a mass of water particles and fiber must pass. In this stream, fibers individually and in bundles are dominated by the more prominent mass actions of the liquid as it comes into the influence of the field of flow separation.

The floor of the field of flow separation in a screen is composed of many rectangular orifices, spaced usually from ⅛ to ¼ inch apart and from 0.006 up to about 0.030 inch wide with the direction of these orifices usually parallel with the flow over the surfaces of the plates.

First are considered the forces at work on a stream of water particles in which no fiber is suspended in the pattern of relative motion between a fluid and the parallel boundaries of an open flume without any rectangular orifices.

This motion of the mass of water particles is generated by the slope or hydraulic gradient within the screen. The motion is kept laminar when the velocity (slope) gradient relationship is in proper balance with the screen boundaries of the screen vat or flume.

The forces at work in this velocity field pulling it apart are only those in the immediate vicinity of the parallel boundaries and the floor of the open conduit or flume, and are liquid shear or molecular friction (sometimes called viscous shear).

Surface tension and the inward molecular pulling forces of the water particles have no serious influence on the field of turbulence created by this liquid or viscous shear in the immediate vicinity of the wall and floor boundaries of the flume. Their forces are utilized in maintaining the laminar formation in the stream above this turbulent field.

Second, the forces at work in a flume, the bottom of which contains many small rectangular orifices, e.g., .010 inch wide and any length arranged in the conventional patterns eight slots per inch and the slots arranged parallel with the flow are considered. *No* pulsating forces are active to intrude their influences on the natural fixed flow habits of the water particles in motion in a laminar pattern in the open flume.

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* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

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[1] Service Engineer, W. A. Hardy & Sons Co., Fitchburg, Mass.

Here the laws applied to the flow through orifices govern and the interest is in that which governs the field of flow separation *(1)* in the vicinity of a long, narrow, sharp-edged slot *(2)*, Fig. 1.

1. The flow is radial in all directions toward the orifice (slot sink).
2. The predominating external force is the mass weight of the volume of water particles directly over the orifice. This is the gravitational action or force across which there are no cross currents or forces.
3. The inertia forces are represented by the product of mass and acceleration of fluid particles (falling bodies accelerate, etc.).
4. Forces due to viscosity, that is, the shearing forces setup between the adjacent particles of moving fluid.

The value of these forces varies from zero in those radial flow paths that must be bent 90° at the very edges of the orifice to some value of force less than that represented by the total gravitational force measurable by the weight in the column of water particles directly over the orifice or slot.

The 90° bend area in which the force areas are of minimum pressure intensity (and have no value) is designated as the area of stagnation which has the characteristics of cavitation and definitely lowers very effectively the efficiency of any hydraulic device *(2)*.

The (90° bend) sharp shear stress offers an extremely effective resistance to flow of water particles alone. An excess of shear stress areas as found in too many orifices or slots per inch too closely spaced create too great a combined area of stagnation within a given field.

It must be realized that consideration is still being given to the active and inactive forces in a field of fluid particles in motion down a hydraulic gradient. There are neither fibers present among the liquid particles nor are there any other forces being exerted on the liquid particles other than those formed in the steady uninterrupted flow motion of liquid particles through an orifice in a hydraulic gradient. It is mostly gravitational force.

Effect on Fiber in Stagnant Areas

It is definitely known that when fiber is present in a mass of liquid particles that are flowing through many small orifices in the floor of a flume (a screen line with the diaphragm lifting mechanism temporarily disconnected) that the full force of their large stagnant area composed of the many small stagnant areas around the slotted orifices quickly becomes the predominating force to block out all the gravitational force, even on the water particles. The fibers being caught in the stagnant 90° bending area cannot make the bend and become lodged across the slots.

Plates with eight slots per inch will block completely in much less time than plates will with four slots per inch with the same size rectangular orifice in each. This is directly due to the fact that the total stagnant area surrounding the four slots to inch drainage area is much less than the total stagnant area surrounding the eight slots to the inch drainage area. There are also many more radial flow paths in a plate with eight slots per inch than in one with fewer slots. The nearness of so many neighboring flow paths creates an abnormal number of counteracting flow forces which help to increase the adverse effect of the sum total of all the stagnant areas.

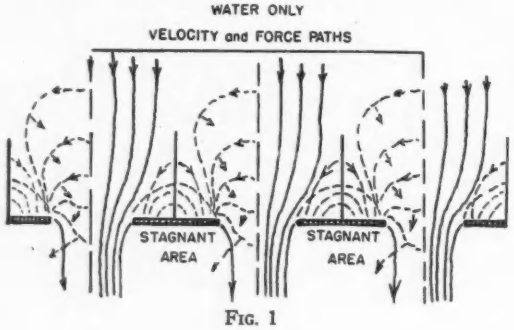

FIG. 1

Much can be learned about the habits of fluid particles in motion and fiber in motion in the field of flow separation around a number of rectangular orifices at various spacings simply by permitting a small trickle of water and fiber to flow slowly onto the screen plates, when the diaphragm lifting mechanism is disconnected. The results of such an observation will aid materially in helping one to understand the conflicting natural forces at work on these two very dissimilar materials.

Hydraulic and Mechanical Forces

An analysis of the forces at work when the diaphragm lifting mechanism is in operation with fiber being present in the water particles is as follows.

The main function of the force directed upward through the screen plate slots by the upward motion of the diaphragm is to dislodge fiber caught in the stagnant areas surrounding the edges of the orifices; fiber which is dimensional to such an extent that its length is many times its diameter or its cross-section area. That one fiber or bundles of fibers is surrounded by millions of water particles of molecular dimension.

The up and down stroke of the diaphragm is of various distances ranging from 1/32 to 3/8 inch with the average lengths around 3/16 inch.

Water Jet Blow-back

If the screen vat is of such a type that it does not have a drop-leg in the outlet it must be operated by lifting a diaphragm chamber completely full of water against the underside of the plates to create a sufficient force up through the slots to dislodge the fiber that becomes trapped in the stagnant areas surrounding each rectangular orifice or slot. The material in this jet forced up through the slots is hard incompressible water. This water jet is forced upward through the slots, to nearly the full distance to stroke travel above the surface of the plate.

This harsh upsurging jet of water creates a violent disturbance to the already turbulent area in the field of flow separation which is naturally turbulent, due to the bending of the stream and the viscous shear taking place on the surface of the screen plate where the turbulent strata tears itself from the laminar streamlined strata above it. These are very damaging forces, wherever they are found. No thought has been applied to better control and to better utilize the forces at work at this point by properly proportioning the width of the bar between the slot, the width of the slot, the direction of the slot to the flow, the length of the lift of the diaphragm, the frequency of this lift, and other mechanical factors.

Very little can be done to improve the control of the influence of the hydraulic and mechanical forces at work on a screen built without an adequate drop-leg.

Previously it was indicated that gravitational, radial, and molecular forces were at work aiding the flow of the liquid and fiber particles through the rectangular orifices or slots. Opposed to these are those forces generated by the stagnant areas and the 90°

liquid shear bending zones found in the radial paths directly over the stagnant areas.

With these forces in action on the down stroke, there is a definite contraction in the jet on its way through the orifice *(1)*. The thickness of the sheet of water T is $\frac{\pi}{\pi + 2}$ times the width b of the opening. It is stated on good authority that this contraction is completed at a distance of about one-half of b from the orifice.

Therefore, if b is 0.010 inch wide, the thickness of T, the jet is then 0.0611 inch at a distance of 0.005 inch under the orifice, and if falling into space would enlarge slightly beyond this point in near atmospheric pressure (Fig. 2). With the diaphragm chamber operating full of water, the shape of the contracted jet is reproduced in reverse on the topside of the plate to nearly such a height as corresponds with the lift of the diaphragm, but this hard jet is being projected into the field of flow-separating force currents weighted down by the weight of the head over the openings of the slots.

In dealing further with a water jet type of blow back, one can readily see that because it is incompressible, and is formed normally in 0.1 second that it cannot be controlled into extending some of its energy by being bent back over the 90° edge of the slot into the stagnant area surrounding the edges of the slot.

If air had been blown back through this slot, because of its flexibility, most of its energy would be directed into the stagnant areas and help materially in keeping slow moving fiber in suspension in these areas.

When the rectangular orifices or slots are too closely spaced, there are too many multiples of gravitational forces directed in a limited area through which the countless water particles can crowd and prematurely leave the fiber particles. Because of their length and cross section the fibers are hindered by the flow retarding forces which surround every orifice. The excess numbers of stagnant areas of lost flow forces creates a set of flow resisting forces to the fiber far in excess to those that can be controlled to help the flow of the fiber through the slots.

In a style E plate, eight slots to the inch, there are 1312 slots (each with two edges) each bar between each of these slots is approximately 0.125 inch wide. The width of the stagnant zone surrounding each slot cannot exceed 0.0625 inch (1/16 inch); thus there are 2624 stagnant zones influencing the flow forces around 1312 orifices or slots. This 0.0625 inch dimension represents the area devoted to generating radial forces. These forces depend on area to develop their strength or power.

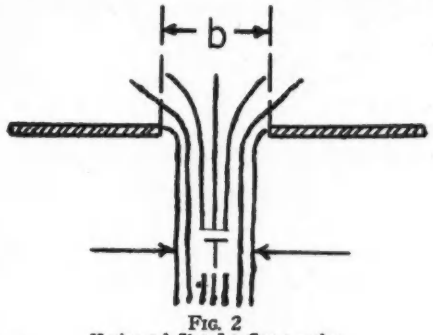

FIG. 2
Horizontal Slot Jet Construction
$T = b\frac{\pi}{\pi + 2} = 0.611$ lb.

There are 2378 linear-inches of slotted areas each with two edges which gives 4756 linear inches of slot edge over which sufficient force must be provided to offset the flow energy lost when a liquid must perform a 90° liquid shear bend. The value of all of these radial flow forces in these 90° bends is zero, for liquid particles exclusively. Consider the effect of these 4756 inches of 90° flow bending corners on raw stiff fiber particles that are always lagging behind in the flow of water particles. The above gives some idea of the size of fiber resisting forces on the top side of an eight slot to the inch style E plate.

To create an understanding of the possibilities of utilizing and controlling the forces at work flowing through a lesser multiple of rectangular orifices or slots, a plate with five slots per inch is considered. In it are 824 slots, each bar between each of these slots is 0.2 inch, approximately 13/64 inch wide. The width of the stagnant zone surrounding each of these slots does not greatly exceed 0.0625 inch (1/16 inch) but a wider field for the generating of the radial forces is provided which accelerates the flow forces trying to pass over the stagnant fields. Nevertheless, because of 824 slots there are 1648 stagnant zones as compared with 2624 stagnant zones in the 8-slot plate to influence the flow around 824 slots. In this case 0.1 inch (one-half of 0.2 inch equals 0.1 inch) is the width of area covering the field of stagnation and provides a slightly greater area to generate some radial force. The greater width affords a larger radial force field, which aids materially in deflecting the fiber particle into the liquid shear action taking place near and above the edge of the orifice.

Less slots per inch greatly diminish the premature runoff of the water particles.

In a five slot to the inch plate, there are 2984 linear inches of 90° slot edge compared with 4756 inches of flow bending corners in the 8-slot plate. As the total length of the liquid shearing forces in a plate is decreased control is gained over more forces acting on the fluid particles and the use of these forces can be made in the directional control of the fibers without the excessive runoff of water particles.

With 1492 linear inches of orifice opening in the 5-slot plate as compared with 2378 linear inches of orifice opening in the 8-slot plate, the turbulent disturbance in the field of flow separation directly over the slotted area will be much less and consequently much more beneficial if one can utilize air pressure for the blow back jet rather than a hard incompressible water jet.

To cover the forces at work in the field of flow separation generated by the upstroke of the diaphragm and projected into the field of forces at work on the water particles and fiber particles trying to get into position to pass through the rectangular orifices, the physical properties of the water jet and air jet types of blow-back must be considered.

Viscosity is a property of a fluid by virtue of which it offers resistance to shear stress and is in linear proportion to the ability of the fluid to resist such stress.

Air is a mixture of gases and it follows the gas laws very closely *(1)*. Gas occupies all the space in which it is contained. Its volume is reduced by an increased pressure or compressive force, the pressure within the gas increasing until it just balances the ap-

plied force. *This property can be utilized* to control the depth of the turbulent field directly over the slotted area, keeping the influence of excess turbulence from becoming a disturbing factor in the laminar stream which does the major part of the work of objectional speck separation.

The compression forces of air in the upstroke of the diaphragm meeting the gravity pressures of water directly over the slotted orifices are crowded off into the sides of the flow field surrounding the rectangular orifices, because the gravity forces are greater than the flow forces in the stagnant radial flow paths. The action of this air pressure through the stagnant radial flow paths is such as to dislodge fiber particles from the stagnant area adjoining the edges of the slot. However the dislodged fiber meets other radial pressure forces bearing other dislodged fiber from the adjoining stagnant area bordering the next adjacent slot. See Fig. 3. The stream lines of force meet at a point above the center of the bar separating adjoining orifices or slots where they start to rise. They cannot go down so they go up to meet and join the forces of viscous shear being dominated by the gravitational forces that are directing the flow of the liquid and fiber particles down through the orifices or slots. The width of the bar between the slots then governs or adjusts the angle of liquid shear to the point where it is not excessively sharp and guides the fiber into and through the slots.

If the blow back jets are composed of water, it is knifelike in shape since water at 100° F. is about 36 times as viscous as air. At 600 throws a minute, its life is only 1/10 of a second and it is known that a hard sharp stream of water cannot be bent quickly or easily in such a short duration of time. Consequently this hard narrow jet of water is projected straight up through the orifice against the gravitational forces trying to get down through the orifice. Because this jet of water possesses so much more viscosity and hardness than air, it resists the liquid shear and does not bend the 90° angle around the edge (of the rectlinear orifice) to act as a disturbing medium to the fiber that has lodged in the stagnant area surrounding each orifice.

What does happen is shown in Fig. 4. The gravitational force over the orifice being greater than that over the bars between the orifices, the water jet when bent over the orifice follows the lines of least resistance which are the gravitational pressure lines. These are already bearing down on the stagnant areas on the bars between the slots, thereby the forces that are binding the lodged fibers are augmented causing the need of more and vigorous hosing.

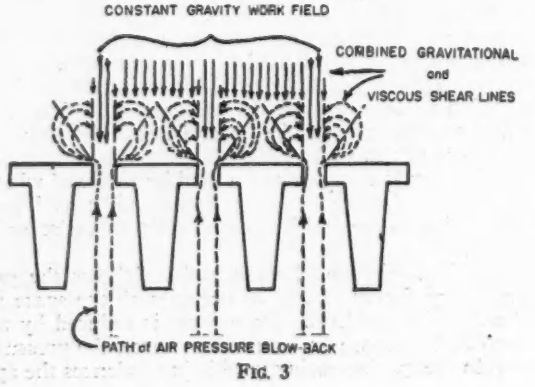

FIG. 3

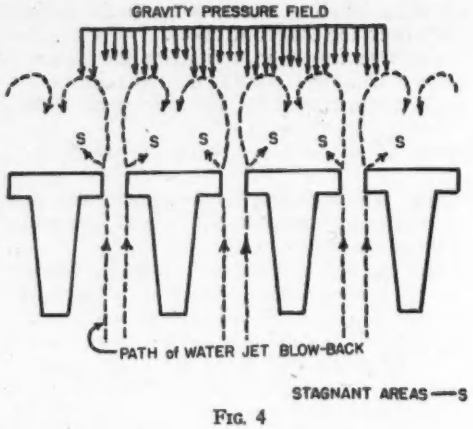

FIG. 4

Conclusion

It appears one aim has been to use as many closely spaced slots of extreme minimum dimensions as possible in an effort to make a screen plate act as a strainer, neglecting the hydraulic forces which can control distribution. If the number of slots present in a plate creates an excess of 90° angles, it is extremely difficult to create an ideal condition for the correct viscous or liquid shear action to take place. A plate with less slots will more properly proportion the correct number of water particles that should be assigned to lead an individual fiber or bundle of fiber to its ultimate destination with a minimum degree of fiber displacement.

Beyond this point, much can be done in combining slot spacing, bar width, limiting stroke control, number per minute, length, etc., with thought to the correct combination with depth of stream on the plates, pitch of gradient, distribution of stock over the plates, and other points too numerous to mention at this time. By building into the screen and screen plate, the correct mathematical dimensions with mechanical simplicity of design the range of control can be greatly expanded.

It has been the aim of the author to keep this discussion of the various mechanical and hydraulic forces at work well within the limits of elementary mathematics, mechanics, and hydraulics. It is necessary to refer to the works on hydraulics by Newton, Reynolds, Weber, Froude, and Cauchy for the fundamental principles involved and in particular to:

Newton's laws governing force.

Reynolds, forces of viscosity at work on the relationship between the turbulent and laminar flow.

Weber, the action of surface tension on the influence of cross flow forces originating from gravity and capillary waves.

Froude, on the findings of weight and drag resistance in the form of floating bodies.

Cauchy, on the forces of elasticity which are active in the mechanics of wave motion.

All of these are recognized as basic ratios and are influencing factors in the field of flow separation over and under the slotted area of a screen plate.

Literature Cited

1. Dodge and Thompson, "Fluid Mechanics." McGraw-Hill Book Co., Inc.
2. Rouse, "Fluid Mechanics for Hydraulic Engineers." McGraw-Hill Book Co., Inc.

Relationship Between Cellulose Viscosities Measured by the TAPPI Standard and the Cupriethylenediamine Methods*

By Alfred J. Corey[1]

Abstract:

Viscosities of a series of bleached sulphite pulps covering a range of high and low viscosities have been measured by the TAPPI standard and the cupriethylenediamine methods. The results obtained by the two methods are compared on the basis of 1% cellulose solutions, and the relationship is shown graphically.

The measurement of cellulose disperse viscosities has long been recognized as an important method for characterizing certain cellulose properties, particularly with regard to materials to be used in the preparation of cellulose esters and ethers. More recently the value of this method for indicating the quality of paper pulps has also been recognized, and the measurement of pulp viscosities has become a routine mill test.

The pulp mill chemist encounters two major difficulties with regard to the measurement and interpretation of cellulose viscosities; namely, the difficulty of obtaining rapid, reproducible results in control testing, and the difficulty of correlating tests from different laboratories.

There are several well known methods of measuring cellulose disperse viscosity in cuprammonium solution, such as the TAPPI standard method, (*1*), and the American Chemical Society method. Unfortunately, the producers and consumers of cellulosic materials have not yet standardized on the use of one method, and, to add to the confusion, there are numerous modified methods in use in individual laboratories where the accepted methods have been found unsuitable for control purposes.

The cupriethylenediamine method developed by Hatch (*2*) solves the difficulty in obtaining rapid, reproducible results. Solution of the other mentioned difficulty must await the general acceptance of a standard cellulose viscosity test by all persons concerned with such tests.

In introducing a new testing procedure it is often necessary to establish a relationship between results obtained by the old method, and similar results obtained by the new method. This relationship links up past control data with the present control tests, and serves as a basis for dealing with customers unfamiliar with the new test. It has been found advisable to establish such a relationship between the TAPPI standard method and the cupriethylenediamine viscosity tests.

For convenience cupriethylenediamine has been abbreviated to C.E.D. in the laboratory and will be so designated in the following discussion.

Procedure

In order to establish this relationship, a number of fully bleached sulphite pulp samples, covering a suitable range of viscosities, were obtained in the mill or were specially prepared in the laboratory. Four to eight separate viscosity determinations were made with each of the pulp samples, by each of the testing methods.

Tappi Viscosity Tests:

The cuprammonium cellulose viscosity tests corresponded essentially to the TAPPI standard method, except with regard to the calibration of the pipets, and the preparation of the pulp samples. Before undertaking this work the viscosity pipetes were all recalibrated with Hartmann Leddon standard viscosity oils which had been checked against a standard reference oil supplied by the National Bureau of Standards. The previous calibration with glycerine solutions indicated a lower viscosity for a given time of flow. Viscosities were measured at 20° C., the pipets being enclosed in a suitable water jacket.

The pulp samples were prepared by drying and then fluffing in a Wennbergs Verkstad dry defibrator. Laboratory tests showed that the action of the fluffer caused no significant decrease in the pulp viscosity.

C.E.D. Viscosity

The C.E.D. tests were carried out according to the method suggested by Hatch (*2*). The speres and viscosity tubes were calibrated with a reference oil obtained from the National Bureau of Standards, and having a viscosity of approximately 200 cp. at 25° C. The pulp samples were disintegrated by stir-

[1] Member TAPPI; Research Dept., Fraser Companies, Ltd., Campbellton, N. B.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

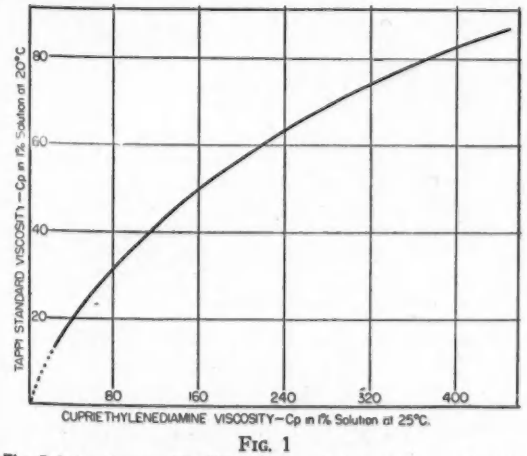

FIG. 1

The Relation between TAPPI and Cupriethylenediamine Viscosities

ring in water, then were formed into a bulky pad on paper in a Buchner funnel, and were air dried without pressing. This provided a loosely felted pulp sheet that could be torn into small pieces by hand, and easily dissolved by 4 minutes mechanical agitation in the C.E.D. solution. Some of the very high, and the very low viscosity samples were run at 0.75 and 1.5% concentration respectively, and the results were then calculated to 1% concentration.

Results

The results of the tests are shown in Table I. The curve shown in Fig. 1 relates the C.E.D. viscosities to the TAPPI viscosities as determined by the oil calibration curve. The variation between individual tests by the C.E.D. method was about 2%. The corresponding reproducibility for the TAPPI tests varied from 5 to 15%.

In view of the relatively small number of points that have been established on the relationship curve, particularly in the higher viscosity range, further work is indicated. The checking of these results by some other laboratory would also be of interest.

TABLE I.—A COMPARISON OF THE VISCOSITIES OF 1% CELLULOSE SOLUTIONS DETERMINED BY THE TAPPI AND C.E.D. METHODS

Sample No.	TAPPI Method cp.	C.E.D. Method cp.
1	10.5	16.2
2	16.4	31.0
3	18.2	38.0
4	24.5	59.6
5	25.2	64.8
6	30.1	83.6
7	40.2	114.5
8	44.0	129.2
9	48.0	158.5
10	71.2	288.4
11	85.5	440.0

Literature Cited

1. TAPPI Standard T 206 m-37, Cuprammonium Disperse Viscosity of Pulp.
2. Hatch, R. S., *Pacific Pulp Paper Ind.* 16, No. 10:13 (1942).

Delaware Valley TAPPI Discusses Coating

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Philadelphia, Pa., on Friday evening, May 5. W. M. Shoemaker presided as chairman assisted by Jacob Edge, chairman of the program committee. About eighty attended. The principal speaker was John F. Halladay of the American Coating Mills, Elkhart, Ind., who talked on "Some Contemporary Coating Processes and the Surface Qualities that They Produce." In this talk Mr. Halladay showed a number of interesting photomicrographs of sheets produced by the more common and new coating processes. Diagrams of the processes were shown.

A report was given of the election results. The new chairman is Andrew L. M. Bixler, Riegel Paper Corp., Milford, N. J. Walter P. Quinn of the Container Corp. of America, Manayunk, Pa., was elected vice chairman and Lois V. Hans of the Hercules Powder Company was reelected secretary-treasurer. W. M. Shoemaker and John D. Davis were elected to the executive committee. Miss Hans reported the membership to be 145. Those present were: C. J. Albert, W. S. Barr, Paul V. Barrow, A. E. Bartlett, Stanley L. Basche, R. M. Bates, Alan R. Boyd, Samuel M. Bratton, S. G. Briscoe, K. W. Britt, W. E. Brow, Robt. E. Bundy, L. K. Burnett, Lien Ching Chen, H. D. Childers, Miss R. M. K. Cobb, Eugene A. Collard, C. M. Connor, L. R. Cramblet, Louis Edward De Santer, J. C. Dieffendorfer, W. P. Dohne, Jacob Edge, H. J. Farra, Joseph J. Fiori, E. N. Glaum, Philip H. Goldsmith, Jesse Good, W. E. Greene, J. F. Halladay, J. C. Harper, Jr., Alex M. Innes, Alex Kienlen, Werner Kaufmann, George J. Lane, Norm Langhrey, Willard H. Lapp, R. G. Macdonald, George B. Martin, R. C. McKee, Lewis B. Miller, A. Moerman, W. B. Morehouse, A. H. Nadelman, L. D. Nicolson, E. N. Poor, R. W. Porter, Walter P. Quinn, Glen T. Renegar, M. D. Reuben, C. W. Rivise, J. Carl Schmidt, Frederick E. Schmitt, John D. Scott, Edw. A. Shallcross, Wm. M. Shoemaker, Chas. A. Shubert, Jay Smith, L. I. Stokes, E. T. Street, Philip L. Talips, R. Temple, G. R. Tomlinson, T. W. Toovey, J. N. Waller, Robert H. Walter, G. C. Walton, A. E. Waugh, K. R. Watt, R. Wiggins, Paul H. Yoder.

Straw for Paper

The recent meeting of TAPPI gave consideration to the problems growing out of straw shortages. In this connection it is interesting to note the following item from the World's Paper Trade Review (London) which outlines the scheme that is being used in Great Britain by the paper industry for straw procurement.

The present arrangement in Scotland for the purchase of straw for paper and board making are to be continued unchanged after the end of February for a further six months, when they will be reviewed again.

The Papermakers' Straw Company, the central buying agency for all the mills, will buy wheat and oat straw in Scotland, for which they will pay the farmer £4 and £4 10s. respectively per ton free on rail, or £4 5s. and £4 15s. per ton if delivered at mill in addition to these prices, the company will pay the merchants' margin.

Contracts will continue to be placed, at the discretion of the Papermakers' Straw Trading Company, Ltd., through licensed straw merchants or traders, who are required to undertake that the farmer will be paid the full prices mentioned above, less the actual cost of haulage including loading and unloading from farm to station or mill, where the merchant or trader undertakes transport. These prices apply to first quality straw packed in compressed, wire-bound bales.

Farmers wishing to sell straw for paper making should inquire of their local straw merchants or traders whether contracts are available. In order to economise transport, straw will normally be bought in areas which are within reasonable distance of the mills.

The National Farmers' Union and Chamber of Agriculture of Scotland stated that the difficulty is being experienced in obtaining supplies of straw for papermaking in Scotland, and the War Committee of the Union are concerned that the surplus supplies of wheat and oat straw lying on the farms should be made available to meet the needs of the paper mills.

Tasmania's Paper Industry Expands

Extensions costing about $16,140,000 have been proposed for Tasmania's newsprint industry, says a report recently received at the Department of Commerce. It is hoped that the additional capacity will increase output by approximately 500 percent.

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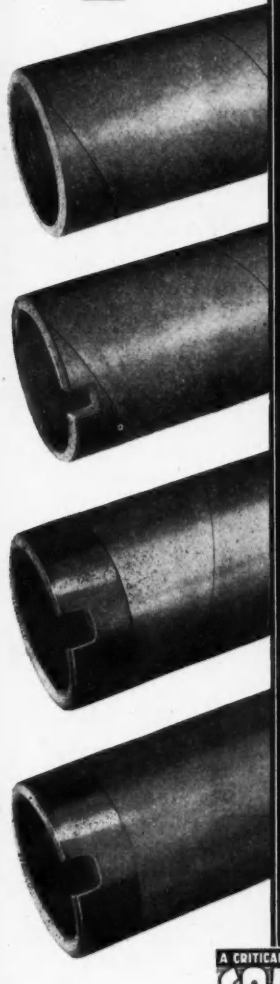

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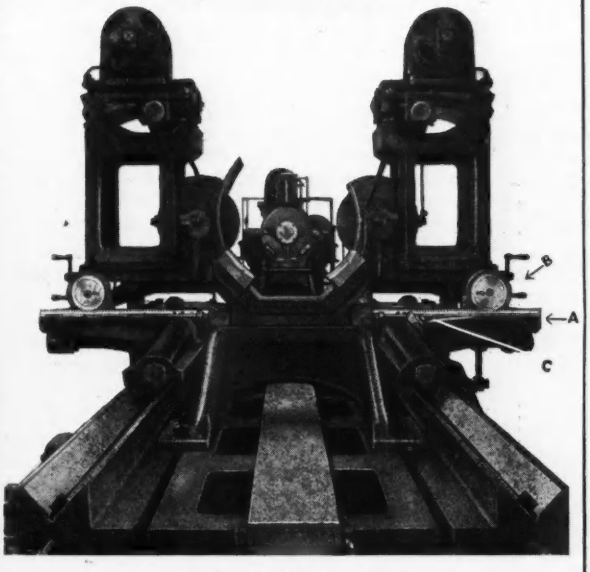

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The in-feed device itself is relatively simple and operates in conjunction with the patented Lobdell crowning attachment, which has long been an outstanding feature of this roll grinding machine. An adjustable crank (C) is operated from the rack which actuates the crowning device. This crank oscillates a rack (A) attached to the sides of the saddle, in turn operating an escapement wheel (B) which elevates a screw at the rear of the upper hinged wheel rest. This elevation feeds the grinding wheel toward the roll as it traverses along the face of the roll, maintaining a constant pressure between the wheel and the work as the grinding surface wears away.

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New York Paper and Pulp Market Review

Paper Demand Continues Heavy—Less Wood Pulp Will Go Into Fine Papers But Output of Newsprint and Book Papers Is Unchanged For Current Quarter—Collection of Waste Paper Upward.

Office of the PAPER TRADE JOURNAL.
Wednesday, May 10, 1944.

Wholesale demand for paper continues at a high level, with output also high. Concern at the prospect of an increasing tightening of the trade supply of some major types of paper, due to larger war requirements, is expressed in some of many current reports received from manufacturers' representatives, jobbers, and general paper merchants.

Newspaper publishers' orders for 30-pound newsprint for May, the WPB states, will total 93,903 tons, and 112,436 tons of standard 32-pound newsprint. May is the first of a two-month experimental period. U. S. publishers who have ordered the 30-pound newsprint for May, will have to reduce their Canadian orders by 10% in order to balance Canadian production for May. The OPA price of 30-pound newsprint is $4 a ton above ceiling prices for standard newsprint. It is understood this differential is temporary.

The index of general business activity for the week ended April 29 rose to 145.5, from 145.1 for the previous week, compared with 135.7 for the corresponding week last year. The index of paper board production was 154.5, compared with 156.4 for the previous week, and with 134.6 for the corresponding week last year.

Paper production for the week ended April 29 was estimated at 90.9% compared with 85.8% for 1943, with 99.8% for 1942, with 99.7% for 1941, and with 89.3% for the corresponding week for 1940.

Paper board production for the week ended April 29 was 98.0%, compared with 89.0% for 1943, with 86.0% for 1942, with 83.0% for 1941, and with 77.0% for the corresponding week for 1940.

Wood Pulp

Pulpwood curing in Canada, the U. S. Department of Commerce reports, has been inaugurated on a year-round basis. By last August, the end of the 1942-43 cutting season in Canada, 11,600 men were working in the woods, east of the Rockies; by the end of September, 18,700; by the end of October, 30,400; by the end of November, 45,400; by the middle of December, 45,500; and by the middle of January 1944, 48,300 men. This is the first time in history that more men have been working in the woods in January than in December.

Wood pulp requirements as estimated by government agencies for the current second quarter, in percentage of pulp per ton of paper, total all grades, is 61.3, compared with 61.8 for the first 1944 quarter. The recommended percentage of fine papers is 18% less; coarse, sack and special industrial papers are slightly increased, while newsprint, book and groundwood printing papers and tissue remain unchanged. Wood pulp going into paper board totals about the same, but container board will be increased about 2%, folding box board, 1.5%, while less cardboard, building and miscellaneous board will be produced.

Rags

Mill buying of new cotton cuttings is active and the market is strong under a rising demand, du largely to shortage of labor in the waste material industry. Prices are firm at ceilings.

Trading in old cotton rags is active. Roofing mill are reported to be in urgent need of more supplies Prices are strong at ceiling levels.

Old Rope and Bagging

Mill requirements for old Manilla rope continue to absorb all available supplies to meet the heavy demands of the war. Demand for most other hard fibers and for jute is heavy. Prices are firm.

Buying of scrap bagging continues at a low level Prices are soft and continue nominal.

Old Waste Paper

The newspaper committee of the Victory Waste Paper Campaign is now within 10% of the weekly goal of 155,000 tons. The WPB reports that 190 paper mills, 170 board mills, and 104 building paper and board mills are using waste paper as raw material.

Mill receipts of paper stock for March totaled 619,000 tons, while inventories totaled 256,000 tons. This compares with receipts of 562,000 tons in February, when mill inventories aggregated 251,000 tons.

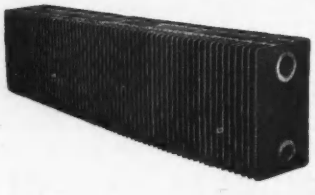
Demand for all grades of paper stock is heavy, with prices strong at ceiling levels. Many current reports state that collections represent too large a proportion of newspapers and magazines containing groundwood, and the urgent need is for larger collections of wrapping papers and kraft corrugated and other boxes manufactured from strong fibers.

Twine

Demand for twine continues active. No important change in prices or in supply has been reported at this date. The market is firm with prices well maintained.

Patents Fin Heating Section

A patent on the cast iron "fin" heating section used in their heaters, blast coils, and radiation equipment, has been issued and assigned to D. J. Murray Manufacturing Company, Wausau, Wis., according to an announcement from the United States Patent Office. This "fin" heating section is made in one piece of high-test cast iron, so that there are no soldered, brazed, welded or expanded connections in it. The unit heaters and blast coils using this new "fin" section carry the trade name "Grid."



Illustrated here is a condenser "fin" section as used in unit heaters, blast coils, and radiation. The "fin" sections can also be adapted for use as radiators, both open and convector type.

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, May 10, 1944.

BLANC FIXE—Prices on blanc fixe continue to conform to prevailing quotations. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Demand is reported active with the supply situation satisfactory. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand heavy. Deliveries are reported improved. Prices unchanged. Solid and flake scarce. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand active, with all allocations reported supplied. Supply situation favorable. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—The rosin market reports lower prices on some grades this week. "G" gum rosin is currently quoted at $4.60 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $4.59 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $4.87 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Demand is moderate for the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda ash is reported in excess of current production. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn available for trade consumption is reported in rising volume under Government control and grinding plants have reopened. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is reported satisfactory for the week. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $2.35 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR — Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The current price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported moderate. Domestic grades are currently quoted at from $16 to $21 per ton at works.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	*$58.00	@	—
Sheets	66.00	"	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots

White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00

Boards, per ton—

News	*48.00	@	—
Chip	*48.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-160, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.35
25% Rag	16.40 " 20.00	17.55 " 21.90

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$13.30
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. & S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. & S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight, Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	80.00

Transportation Allowances Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags (Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.00*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.00*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.00*

* OPA Maximum Prices.

THE HERMANN CLAFLIN
CONTINUOUS BEATER & REFINER
FOR
ECONOMICAL STOCK PREPARATION

—:—

Numerous installations have proved its ability to improve quality and with a substantial saving in power.

—:—

Adaptable for refining knots and screenings. Continuous and closed systems.

—:—

The Hermann Claflin is built in two sizes at the present time. Large capacity No. 3 ready in near future.

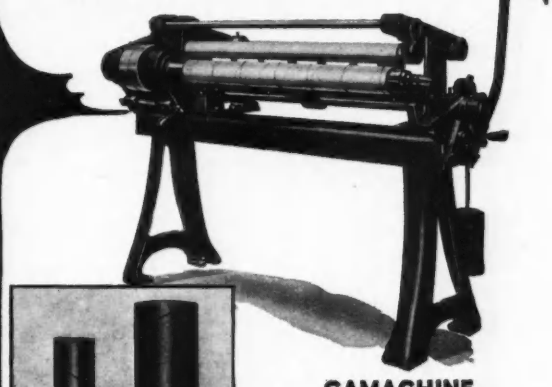
—:—

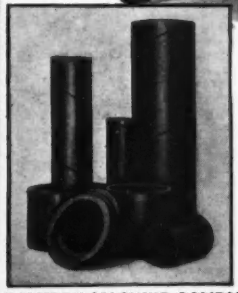
Operated at Conventional Jordan R.P.M.

—:—

THE HERMANN MANUFACTURING CO.
Also Mfg's. Sheet Making-Pulp Testing Apparatus
LANCASTER, OHIO

CAMACHINE
High Speed Tube Cutter





CAMACHINE
High Speed Tube Cutter

This gang cutter cuts spiral tubes into proper lengths to manufacture containers for shells, ammunition, paints, soap powders, etc. Write for interesting details.

CAMERON MACHINE COMPANY, 61 Poplar Street, Brooklyn 2, N. Y.
MID-WEST OFFICE, 111 W. MONROE ST., CHICAGO 3, ILL.

PRICE & PIERCE »»»»»»»ltd•

Wood Pulp & Paper Agents

60 East 42 Street New York, N. Y.

Producers of

SULPHUR

Large stocks carried at all times, permitting prompt shipments . . . Uniformly high purity of 99½% or better . . . Free of arsenic, selenium and tellurium.

TEXAS GULF SULPHUR CO. Inc.
75 E. 45th Street New York 17, N.Y.
Mine: Newgulf, Texas

Old Rags

White, No. 1—
Repacked .....*3.80 " —
Miscellaneous ....*3.20 " —
White, No. 2—
Repacked .....*2.90 " —
Miscellaneous ....*2.65 " —
Third and Blues—
Repacked .....*2.20 " —
Miscellaneous ....*1.80 " —
Roofing Rags—
No. 1.....*1.55 " —
No. 2.....*1.45 " —
No. 3 (bagging)..*1.35 " —
No. 4.....*1.35 " —
No. 5A.....*1.35 " —
Old Manila Rope.. 5.75 " —

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings.. 2.25 @ 2.40
New Mixed Cuttings. 2.00 " 2.20
New Light Silesias.. 5.50 " 5.75
Light Flannelettes... 5.50 " 5.75
New White Cuttings. 7.00 " 7.50
New Light Oxfords. 4.00 " 4.50
New Light Prints... 3.00 " 3.25

Old Rags

No. 1 White Linens. 7.50 " 8.50
No. 2 White Linens. 6.50 " 7.50
No. 3 White Linens. 4.50 " —
No. 4 White Linens. 2.25 " 2.25
No. 1 White Cotton. 4.25 " 4.75
No. 2 White Cotton. 3.25 " 3.75
No. 3 White Cotton. 2.50 " 3.00
No. 4 White Cotton. 1.90 " 2.20
Extra Light Prints.. 2.00 " 2.40
Ord. Light Prints... 1.75 " 2.15
Med. Light Prints... 1.55 " 1.95
Dutch Blue Cottons. 2.25 " 2.50
French Blue Linens. 3.00 " —
Checks and Blues... 2.00 " —
Linsey Garments.... 1.90 " 2.00
Dark Cottons..... 1.50 " 1.60
Old Shopperies..... 1.30 " 1.45
New Shopperies..... 1.45 " 1.50
French Blues..... 2.25 " 2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 4.25 @ 4.35
Wool Tares, light.... 4.25 " 4.50
Wool Tares heavy... 4.50 " 5.00
Bright Bagging..... 4.50 " 4.85
Manila Rope—
Foreign ..... — " —
Domestic .....*5.75 " —
Jute Threads..... 5.50 " —
No. 1 Sisal Strings..*4.00 " —
Mixed Strings..... 2.00 " —
* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½ @ —
No. 1 Hard White Envelope Cuts.... 3.12½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, one cut..... 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Mixed Groundwood Fly Leaf Shavings ..... .90 " —
Mixed Colored Shavings ..... .75 " —
Mixed Groundwood Colored Shavings.. .90 " —
Overissue Magazines ..... 1.67½" —
No. 1 Heavy Books & Magazines..... 1.67½" —
Mixed Books..... .85 " —
No. 1 White Ledger 2.17½" —
No. 2 Mixed Ledger, colored ..... 1.87½" —
New Manila Envelope Cuttings, one cut.. 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
Extra Manilas..... 1.85 " —
Mixed Kraft, Env. & Bag Cuttings.... 2.75 " —
Kraft Envelope Cuttings ..... 1.25 " —
Triple Sorted, No. 1 Brown Soft Kraft. 2.50 " —
New 100% Kraft Corrugated Cuttings.. 2.25 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
New Jute Corrugated Cuttings ..... .90 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.15 " —
Box Board Cuttings. .72½" —
White Blank News.. 1.65 " —
Overissue News..... .85 " —
No. 1 News..... .75 " —
No. 1 Mixed Paper. .70 " —
Old Corrugated Containers ..... .82½" —
Mill Wrappers..... .85 " —

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—
India ..... .21 @ —
White Hemp..... .21 " —
Fine Polished—
Fine India..... .26 " —
Unpolished—
Box ..... .17½" —
Paper Makers..... .17 " —
Tube Rope ..... .19 " —
Wall Paper..... .20½" —
Wrapping ..... .23 " —
Soft Fiber Rope... .19 " —
Cotton ..... .25 " —
(Hard Fiber)
Medium Java..... .18 " —
Mex. Sisal..... .16 " —
Manila ..... — " —

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—
New White No. 1..... .07¼
New White No. 2..... .05¾
Light Silesias..... .05¾
Black Silesias, soft..... .03¾
New Unbleached ..... .07½
Washable Prints ..... .04¼
Washable No. 1..... .03
Blue Overall..... .05½
Cottons—According to grades—
Washable shredding ..... .01¾
Fancy Percales ..... .04¾
New Black Soft ..... .03¼
Khaki Cuttings—
Unbleachable Cotton Cuttings .03½
Bleachable Cotton Cuttings.. .04¼
Men's Corduroy ..... .03½
Ladies' Corduroy ..... .03
Cottonades ..... .03¼

Domestic Rags (Old)

White No. 1—Repacked ..... 3.80 " —
Miscellaneous No. 1. 3.20 " —
Miscellaneous No. 2. 2.65 " —
White No. 2—Repacked ..... 2.90 " —
Thirds and Blues—
Miscellaneous .... 1.80 " —
Repacked ..... 2.20 " —
Black Stockings—
(Export) .....Nominal
Roofing Stock—
Foreign No. 1....Nominal
Domestic No. 1... 1.55 " —
Domestic No. 2... 1.45 " —
Roofing Bagging.. 1.35 " —
Old Manila Rope... 5.75 " —

Bagging

(F. o. b. Phila.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 3.00 " 3.50
No. 1 Clean bright—
Sisal Strings ..... .04
No. 2 Clean bright—
Sisal Strings ..... .03
Sisal Jute ..... .02½ " .02¾
Scrap—
No. 1..... 3.25 " 3.50
No. 2..... 1.75 " 1.80
Wool Tares ha... 4.00 " 4.25
No. 1 New Light Burlap ..... 3.00 " 4.00
New Burlap Cuttings 3.75 " 4.00

Old Papers

(F. o. b. Phila)
OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled.. 2.87½" —
Soft White Shavings, one cut..... 2.50 " —
White Blank News.. 1.65 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.67½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper. .70 " —
Overissue News..... .85 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.15 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... 3.25 @ —
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope..... 2.00 " —
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Cut Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... 3.50 " —
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 " —
Aust. Wool Pouches.. 3.75 " 4.00
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging.. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
* OPA Maximum Price.

BOSTON

Old Papers

(F. o. b. Boston)
OPA Maximum Prices

No. 1 Hard White Shavings, unruled. 2.87½ @ —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.67½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper. .70 " —
Overissue News..... .85 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.15 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... 3.25 @ —
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope..... 2.00 " —
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Cut Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... 3.50 " —
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 " —
Aust. Wool Pouches.. 3.75 " 4.00
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging.. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—
New Light Prints. .04½ @ .04¾
Fancy Percales.... .04¼" .04
New White No 1. .06¾" .07
New Light Flannelettes ..... .05¼" .04
Canton Flannels, Bleached ..... .06 " .06½
Underwear Cutters, Bleached ..... .06¼" .06¾
Underwear Cutters, Unbleached ..... .05¼" .04
Silesias No. 1..... .06 " .06¼
New Black Silesias.. .03 " .02½
Red Cotton Cuttings .03½" .04
Soft Unbleached ... .06½" .06¾
Blue Cheviots .... .05½" .06
Fancy ..... .02¼" —
Washable ..... .02¼" —
Khaki Cuttings .... .02¼" .03
O. D. Khaki..... .03½" .03½
Corduroy ..... .03¼" .03½
New Canvas ..... .06¼" .06¾
B. V. D. Cuttings... .06¼" .06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—
Repacked ..... 3.80 @ —
Miscellaneous .... 3.20 " —
White No. 2—
Miscellaneous .... 2.65 " —
Twos and Blues, Repacked ..... 2.20 " —
Old Blue Overalls... 2.25 " 2.50
Thirds and Blues, Repacked ..... 2.20 " —
Miscellaneous ..... 1.80 " —
Black Stockings .... 3.50 " 4.00
Roofing Stock—
No. 1 ..... 1.55 " —
No. 2 ..... 1.45 " —
No. 3 ..... 1.35 " —
No. 4 ..... 1.35 " —
No. 5, Quality A.. 1.35 " —
Quality B.. 1.20 " —
Quality C.. .95 " —
* Old Manila Rope.. 5.75 " —
* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas .....(nominal)
Dark Cottons .....(nominal)
Dutch Blues .....(nominal)
New Checks and Blues..(nominal)
Old Fustians .....(nominal)
Old Linsey Garments....(nominal)
New Silesias .....(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
OPA Maximum Prices.

Shavings—
No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
No. 1 White Ledger 2.17½" —
No. 1 Heavy Books & Magazines ..... 1.67½" —
White Blank News.. 1.65 " —
Mixed Kraft Env. & Bag Cuttings... 2.75 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
Overissue News .... .85 " —
No. 1 News..... .75 " —
No. 1 Mixed Paper.. .70 " —
No. 1 Roofing Rags. 1.55 " —
No. 1 Roofing Bags. 1.45 " —